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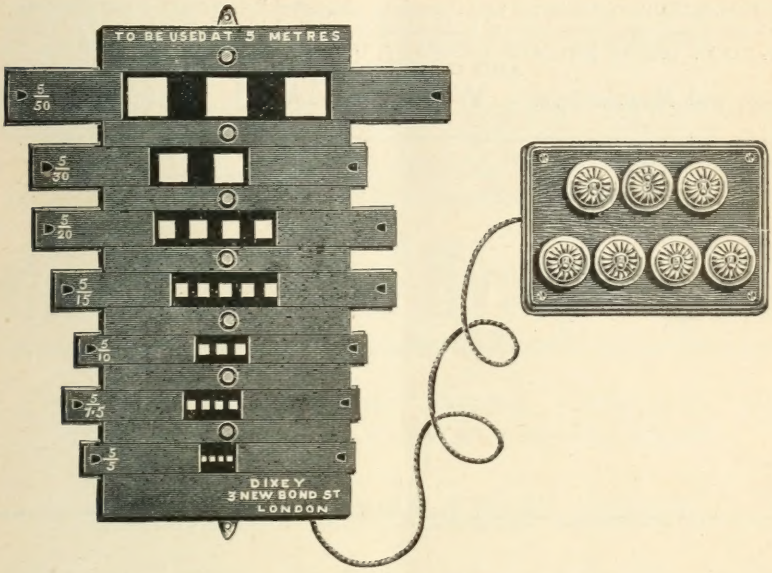

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VOL. V.—No. 1.] *JANUARY 1, 1907.* [ONE SHILLING.

CONTENTS.

INTRA-OCULAR TUBERCULOSIS.*

BY

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Historical.

Affections of the eye which we now know to be tuberculous were during the first part of last century included under the heading of *fungoid growths of a non-malignant character*.

As far back as 1711 Maître-Jan (1) recorded a growth of this description, starting from the iris, implicating the cornea and projecting between the lids ; after treatment with caustics it permanently shrivelled and cicatrised.

In the posthumous work of J. C. Saunders (2) published in 1811, two cases of a similar character are described. W. Lawrence (3) in 1833, and C. G. Lincke (4) in 1834, wrote excellent accounts of the disease.

It will be well here to quote that given by Lawrence, as it pictures stages in tuberculosis of the eye which now, owing to early enucleation, are not very frequently seen. He says :

> Sometimes innocent fungous excrescences arise from inflammation affecting the anterior part of the globe. After severe external ophthalmia, with considerable redness, and often violent pain in the organ, a fleshly vascular substance may spring up from the surface of the sclerotic coat, from the orbiculus ciliaris, or from the cornea ; or such a production may proceed from the iris, and cause ulceration of the cornea. Vascular or fungous growths, arising in this way, may assume a formidable appearance for some time and then gradually subside, the eye going into a state of atrophy. After the existence of severe inflammation a bluish prominence may arise in the seat of the orbiculus ciliaris, apparently proceeding from within outwards, so as to induce the suspicion that it may be a fungus arising from the interior of the globe. This swelling may become yellow, break and discharge matter ; after which the globe shrinks, without further injury to the patient.

Lincke introduced the term "granuloma of the iris," which was afterwards employed by von Graefe, De Wecker, Hirschberg, Steinheim (5) and many others. It is now generally accepted that cases so spoken of are really tuberculous.

Mackenzie (6) in 1854 mentions a non-malignant solid tumour of the iris "which appears to be in general a scrofulous tubercle," and the same affection as that described by Delarue (7) under the head : *Des Excroissances charnues de l'iris.* In this affection he says :

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* A communication read at the XV International Congress of Medicine, Lisbon, 1906.

(1) *Traité des maladies d'œil.* (Troyes.)
(2) *Treatise on some Practical Points relating to Diseases of the Eye.* (London.)
(3) *A Treatise on Disease of the Eye.* (London.)
(4) *De fungo medullari oculi.* (Leipzig.)
(5) *Archives of Ophthalmology.* Vol. I, 1870, p. 647.
(6) *Treatise on Diseases of the Eye.* 4th Ed., London, p. 705.
(7) *Cours Complet des Maladies des Yeux*, p. 206, Paris, 1820.

The iris generally becomes first of all whitish at some particular part of its extent, and then rises into a tumour, which assumes a yellowish colour, with red vessels ramifying over it. Sometimes such a tumour suppurates, and bursts through the sclerotica, after which the eye becomes atrophic.

He further mentions that:

The posterior part of the choroid is sometimes the seat of a tumour, which is probably of the nature of scrofulous tubercle, or a fibro-plastic tumour. It separates the membrane into two laminæ, between which it is deposited. Much more frequently have non-malignant growths been observed in the anterior part of the choroid.

The first description of tubercle of the choroid appears to have been given by G. de Mussy in 1837. He noted little yellow granules on the choroid at a *post-mortem* examination on a young girl who died of phthisis.

Jaeger recognized tubercle ophthalmoscopically in the living eye in 1855 and the diagnosis was verified some years subsequently by *post-mortem* examination.

Manz (1) was however the first to make a microscopical examination of tubercle of the choroid in 1858.

The first microscopical examination of tubercle of the iris was in a case published by Gradenigo (2) in 1869. The patient died of general miliary tuberculosis, and the histological examination of the iris tumour was made by Richetti. Berthold (3) followed in 1871 with the description of the histological appearances of the eye of a child, aged two, who had what was termed clinically "granuloma of the iris." It was enucleated and microscopical examination revealed the tuberculous character of the affection.

Having given the names of these pioneers, it is needless to refer to the many who have followed in their steps.

The inoculability of rabbits with tuberculous material injected subcutaneously having been demonstrated by Villemin in 1865, it occurred to Cohnheim in 1877 to introduce it into the anterior chamber of the eye, and by so doing he found he was able to set up a tuberculosis of the iris.

The experimental tuberculosis was shortly afterwards carefully investigated by Haensell (4), Samelsohn (5), Baumgarten (6), Leber, and others.

In 1882 Koch demonstrated that a specific organism could be separated from tuberculous tissue and cultivated outside the body, which would reproduce tuberculosis when inoculated.

The first observer to detect the bacillus tuberculosis in the

(1) *Archiv für Ophth.*, IV, 2, p. 120.
(2) *Annales d'oculistique.*, LXIV, p. 177.
(3) *Annales d'oculistique.*, LXVI, p. 88.
(4) *Archiv für Ophth.*, XXV, 1879, 4, p. 1.
(5) *Berl. klin. Woch.*, 1879.
(6) *Archiv für Ophth.*, XXIV, 1878, 3, p. 183.

tissues of the eye was Haab [1] in 1884. He was followed by Reissman [2], Wadsworth [3], and Lawford [4].

Tests for tuberculosis of the eye.

The foregoing brief historical note serves to show that we have three tests which can be applied for determining the tuberculous character of a growth in the eye. (1) The histological test, (2) The experimental test, and (3) The bacteriological test. The respective value of each of these tests will now be discussed.

(1) *The histological test.*—The essential histological features of tubercles have formed a fertile subject of discussion since the days of Laennec.

There is now, however, a consensus of opinion that the reaction of the tissues to the tubercle bacillus consists in an aggregation of cells consisting of a central giant cell of the type first described by Langhans and now known by his name, epitheloid cells, and marginal lymphocytes. Central degeneration, called caseation due to anæmic or toxic necrosis is a common termination of such aggregations; they may, however, undergo a fibrosis and become converted into a mass of cicatricial tissue.

A new growth in the eye showing histologically the aggregations of cells above mentioned, the so-called "giant cell systems," and also areas of caseation may almost certainly be pronounced tuberculous apart from any other evidence.

The presence of caseation alone, of giant cells alone, or even of giant cell systems, is not, however, sufficient proof.

The tissues may react to other stimuli, besides that of the tubercle bacilli, so as to produce these appearances.

As is well known, the injection of lycopodium spores or cinnabar granules into rabbits excites the formation around them of giant cells with epitheloid cells and lymphocytes.

Around foreign bodies implanted in the eye, such as a piece of an eyelash, or a caterpillar's hair in the affection termed ophthalmia nodosa, accumulations of cells take place similar in appearance to the giant cell systems of tubercle.

The giant cells, moreover, may be of the so-called Langhans' type, *i.e.*, having their nuclei arranged peripherally.

The writer has also met with giant cells of this type, epitheloid cells, and lymphocytes surrounding pieces of lens capsule which have become entangled in the wound after extraction of cataract.

At the Ophthalmological Society at Heidelberg in 1897,

(1) *Klin. Monats. für Augen.*, XXII, 1884, p. 391.
(2) *Arch. für Ophth.*, XXX, 1884, 3, p. 251.
(3) *Trans. Ophth. Soc.* III, p. 474.
(4) *Trans. Ophth. Soc. of U. K.* VI, 1886, p. 348.

Axenfeld showed specimens from eyes suffering from a uveitis which had caused sympathetic ophthalmitis, in which areas with epithelioid cells and giant cells like those met with in tuberculosis were present in the choroid. There was no caseation and bacilli were not present, and in spite of the histological appearance, Axenfeld did not regard them as tuberculous. He argued that, if they were, tuberculosis would be oftener met with in cases of sympathetic ophthalmitis. As Axenfeld says, in order to decide the question, it is desirable that pieces of the choroid from the freshly excised eye should be transplanted into the peritoneum of the guinea pig.

The writer has also met with the histological appearance of giant cell systems in the choroid of an eye which excited sympathetic ophthalmitis. The case was remarkable in another way, for three months after the injury the eyelashes and eyebrows of both eyes commenced to turn white, and ultimately became quite white. The clinical details of the case, on this account, were recorded by Tay in the *Transactions of the Ophthalmological Society of the United Kingdom* in 1892, Vol. XII.

(2) *The experimental test.*—Inoculation of tuberculous material has been made into various parts of the eyes of rabbits and guinea pigs; into the cornea by Haensell (1), Panas and Vassaux (2); into the virtreous humour by Deutschmann; and by numerous observers into the anterior chamber. The latter is the most suitable situation for these experiments, the aqueous humour forming an excellent medium for the growth of the tubercle bacillus.

Tuberculous material from different structures of the body, from its various organs, and from their secretions have been inoculated with positive results.

From eyes affected with tubercle, pieces of the iris, or of the choroid, and the aqueous humour have been inoculated. It is essential that the inoculated material should be free from pyogenic organisms, as otherwise a severe iridocyclitis and sometimes panophthalmitis is set up.

So uniform are the results of the inoculation of tuberculous material into the anterior chamber that the experimental test must be regarded as the most certain we possess. Examples of failures where the other evidence of tubercle of the eye was fairly conclusive have however been recorded by Samuelsohn, Haensell and Leber.

The immediate reaction after the implantation of a piece of tuberculous material into the anterior chamber is very slight.

(1) *Archiv für Ophth.*, Vol. XXVII, 3, 1881, p. 93.

(2) *Archives d'Ophtal.*, V, 1885, p. 193.

By the fifth to the eighth day the piece of implanted tissue becomes absorbed and the eye looks normal. After an incubation period of about 20 days in the rabbit or 12 days in the guinea pig the iris becomes inflamed and at the seat of the inoculated tissue some little grey nodules appear. Later, nodules of a similar character are seen scattered about all over the iris. They increase in size, become confluent, often filling the anterior chamber and invading the cornea. Sometimes they cause perforation, undergo caseous degeneration and then subside. General infection, from which the animal usually succumbs, follows after about 2 to 3 months.

(3) *Bacteriological test.*—Tuberculosis is well defined as "an infective disease due to the growth in the tissues of a parasitic micro-organism, tubercle bacillus." (Watson Cheyne).

The demonstration of the bacillus in the tissue is therefore the most conclusive proof of its tuberculous character. Failure to find the bacillus even after skilled and prolonged search cannot, however, by itself be taken as disproving the tuberculous nature of a growth.

Failure to find the bacilli in what was undoubted tuberculosis of the eye has been a common experience of a large number of excellent observers and skilled microscopists. The bacilli in some cases, especially chronic ones, are very limited in number and they might easily escape detection in sections, unless one of them happened to have included a bacillus cut across in its long axis. It is also probable that some of the hardening re-agents used for the eye may interfere with the staining properties of the bacilli.

Haab (1) detected the bacillus in a number of specimens, though they were seven years old and had been immersed in Müller's fluid during that time.

Wadsworth (2) also discovered bacilli in a specimen of tubercle of the iris which had been hardened by Müller's fluid.

Lawford (3) found bacilli in only two out of six cases of tubercle of the choroid, though he examined many sections of each specimen and employed for each three different methods of staining, *viz.*, those of Weigart, Ehrlich, Gram, and Ziehl. In one case, though the bacilli could be easily discovered and were plentiful in preparations of the meninges, none could be discovered in the nodule in the choroid, though it presented every other characteristic of a tuberculous growth.

Hill Griffith (4) says that out of ten cases of tubercle of the

(1) *Klinisch. Monatsbl. für Augenheilk.*, XXII, 1884, p. 391.
(2) *Trans. Am. Ophth. Soc.*, III, 1883, p. 474.
(3) *Trans. Ophth. Soc. of U.K.*, VI., 1886, p. 348.
(4) *Trans. Ophth. Soc. of U.K.*, X., 1890, p. 84.

iris in which bacilli were looked for by different observers they were only demonstrated in four.

Lagrange (1) states that in three cases of tubercle of the iris he easily found the bacillus and in one case of the inflammatory type they were in great abundance.

Mode of origin of intra-ocular tuberculosis.

Several cases of exogenous infection of the conjunctiva with tubercle as the result of wounds have been recorded.

Greeff has described a case of auto-infection of the cornea with the finger nail by a patient suffering from tuberculosis.

Fuchs in his *Text Book on Ophthalmology* mentions that he has seen a case of tuberculosis of the iris develop in consequence of a perforating wound, and the following case of a similar sort is recorded by Louis Dor (2) :

A little boy, aged 4 years, lived in the same house as two phthisical persons. These persons were in the habit of spitting on the floor of the shop where the child played. One day he fell and struck his eye against the ear of a wooden horse which he had been dragging about the floor of the shop. A month later when Dor first saw the child, the eye was quite blind. In the cornea at the seat of injury there was a thickened, yellow, non-vascular scar with a prolongation uniting it to the bound-down iris. An iridectomy was with difficulty performed three days later ; as the consequent exudation became absorbed, some small yellowish elevations were noticed. These were taken to be tuberculous and one was excised and inoculated into a guinea pig. The nodules in the patient's eye then increased in number and the whole iris became involved. The child then developed a cough and began to fall off in its general condition. Ultimately the eye was excised. Both ciliary body and choroid were, besides the iris, found to be invaded by tubercles. The guinea pig which was inoculated also developed tuberculosis.

It might have been thought that the dense fibrous tissue of the cornea and sclerotic would offer an insurmountable barrier to the infection of the interior of the eye by tubercle bacilli from the conjunctival sac. It has, however, been suggested (3) that tubercle of the iris may result by local inoculation in a healthy subject by way of an abrasion of the conjunctiva, or that the initial lesion may be a tuberculous ulcer of the conjunctiva. Mitvalsky, of Prague, suggests that if the respiratory mucous membrane can be infected by the tubercle bacillus after a simple

(1) *Tumeurs de l'œil*, 1901, Vol. I. p. 780.
(2) *Revue Gën. d'ophtalmol.*, XXII, 1903, p. 252.
(3) A. Pechin.—*Gaz. hebdom. de Med. et de Chir.*, Jan. 28, 1900.

catarrh and a mere *derangement* of epithelium, so may the conjunctiva, though it had not previously suffered a loss of substance.

The following is a case recorded by Allen T. Haight (1): A girl, aged 4 years, had a contused wound of the outer canthus and upper lid, perfect recovery was made. Fourteen months afterwards the vision in the eye of the same side failed and several whitish tumours were seen in the choroid involving the macular region. Tubercle of the choroid was diagnosed and the eye enucleated. Four months later iritis developed in the other eye, and shortly afterwards the child died of tuberculous meningitis.

In this case it may have been that tubercle bacilli were inoculated at the outer canthus at the time of injury, that they were carried to the choroid of the eye on the side injured, and 14 months later developed the tuberculous deposits there, which gave rise to a general infection before the eye was removed.

On the other hand, it must be admitted that 14 months is a long interval to have elapsed between the receipt of the injury and the manifestation of the primary lesion, and that there is no proof that there were not some foci of tubercle in a lymphatic gland which may have been a common origin of the disease in the eye and meninges.

Endogenous infection of the eye with tubercle in acute disseminated tuberculosis was first pointed out as occurring in the choroid by Cohnheim; it also occurs, though less frequently, in the iris. In association with chronic tubercle, intra-ocular tubercle is also met with, and numerous cases are recorded of eye affection secondary to a tuberculous lesion situated in a bone, a joint, a lymphatic gland, or the skin.

Besides these cases, however, there are others in which tuberculosis appears in the eye without any previous sign of the disease being detected in any other part of the body. In some of these cases tuberculous lesions have later made their appearance elsewhere, but so far as can be made out from clinical examination, there has been nothing to show that the patient was suffering from tuberculosis previous to the affection of the eye.

It will be well here to quote a classification of recorded cases given by Dening (2):

(1) Thirty-eight cases in which there was no tuberculosis before, and in which the patients were otherwise absolutely healthy at the time of the ocular affection.

(2) Fourteen cases with a tuberculous history, but healthy before and during the attack.

(1) *American Medicine*, Feb. 8th, 1902.
(2) *Archiv f. Augenheilk.*, XXXI, 1895, p. 359.

(3) Three cases with earlier signs of tubercle, healthy at the time of the attack.

(4) Seventeen cases of ocular tuberculosis coinciding with tuberculosis in other organs.

(5) Nine cases which succumbed to general infection.

(6) Ten cases in which the patients remained healthy after the disappearance of the ocular affection.

In the cases where no other tuberculous lesion is discoverable previous to the eye affection, many writers have described the disease in the eye as primary. Fuchs, Leber, and De Wecker, have, however, dissented from this view, holding that a primary tuberculous focus (*e.g.*, caseous bronchial glands) although not demonstrable clinically, must be assumed to exist.

The fact that in more than one-half of all autopsies made upon children, evidences of tuberculous adenitis are to be found, shows that tuberculous lesions of which there is no evidence clinically are often present.

In connection with this matter, case 5, recorded at the end of this report, is of some importance. The child, aged 9 years, came with well-marked tuberculous nodules in the iris of the right eye. No other evidence of any tuberculous affection could be detected in any other part of the body after the most careful clinical examination. The case was treated with injections of Koch's tuberculin. In the course of one month ten injections were made, after each of which there was reaction with rise of temperature. Notwithstanding the injections the affection in the eye progressed, and it was ultimately excised. Five days after the excision an experimental injection of Koch's tuberculin was made. A reaction was produced, the temperature rising to 101.5° F., eighteen hours after it. This seemed to show that, though the eye had been removed and no other tuberculous lesion could be detected clinically, some tuberculous foci was still present. Five years after the removal of the eye a tuberculous gland was removed from the child's neck.

Except through a perforating lesion bacilli could only gain entrance to the eye by being conveyed there in the lymphatic or blood streams.

Deutschmann demonstrated how, after the meninges had been inoculated with tubercle, the optic nerve sheath became involved not by direct spread of infection, but by metastasis. The bacilli carried along in the lymph stream were arrested in their progress and gave rise to nodules of growth. At the lamina cribrosa, where their arrest was especially likely to occur, nodules were frequently met with.

Lagrange (1) produced infection of the eye with tubercle in

(1) *Tumeurs de l'œil*, 1901. Vol. I, p. 779.

rabbits by injecting into the carotid a virulent bouillon-culture of the bacillus.

It has been shown that tubercle bacilli may gain entrance to the blood stream of the fœtus from that of the mother through the placenta.

Baumgarten holds, and his view is supported by some clinical and experimental evidence, that tubercle bacilli may lie latent in an organ until something happens which renders the surrounding structures less resistent, when they produce active changes constituting tuberculosis.

It is possible, therefore, that tubercle bacilli having gained entrance to the blood stream of the fœtus through the placenta may be carried to the eye, lodge there and remain for a time latent. When subsequently aroused into activity by some change in their surroundings they would give rise to a tuberculosis which would be primarily of the eye. Such an origin of intra-ocular tuberculosis must, however, be regarded as of exceedingly rare occurrence.

There is no definite evidence of the possibility of tubercle bacilli entering the blood stream, apart from direct inoculation, in any other way than by the involvement of the blood vessel in some nodule of the disease. So that involvement of the eye through the blood stream is probably nearly always secondary to some foci of tuberculosis elsewhere.

There is a good deal of evidence to show that tubercle bacilli may pass through the mucous membrane of the respiratory tract or alimentary canal and be taken up by the lymphatics without leaving any trace or lesion behind them. Their further progress then becomes arrested by the lymphatic glands which they infect.

It would seem unlikely that bacilli can pass through a mucous membrane into the lymphatic stream and be carried by it to the eye without any involvement of the lymphatic glands.

The predisposing causes of intra-ocular tuberculosis.

In discussing the predisposing causes of intra-ocular tuberculosis there are three sets of influences which it is necessary to differentiate :—

(1) Those which predispose the individual to the disease.
(2) Those which predispose to the localization of the disease in the eye.
(3) Those which predispose certain parts of the eye to be the starting points of the affection.

(1) Of the causes which predispose the individual to tuberculosis it is not necessary to enter much here in dealing with the disease as it affects a particular organ. It will suffice to point

out that when tubercle affects the eye, as when it affects other parts, there is frequently a history of tuberculosis in the family. This is well brought out in the table of cases at the end of this paper in which it will be seen that there is some family history of tubercle recorded in nearly every case in which details were obtained.

A family history of tubercle may imply one or both of two things: (a) a want of resistance power on the part of the individual to the specific organism or (b) increased risk of exposure to infection.

(2) In considering the predisposing causes to the localization of the disease in the eye, it may be pointed out that, as in other forms of what is often spoken of as "surgical tuberculosis," the intra-ocular form of the disease is most frequently met with in childhood, though all periods of life are liable to it.

Wojtasiewicz [1] says: "Ocular tuberculosis is most common in the first half of life. It has, however, been met with at all ages, in very young infants, in adults and in the aged (case of Costa-Pruneda in a child of 38 weeks; Ulrich, 10 months; Leber, 15 months; Herter, 39 years; Manfredi and Cofler, 43 years; Cohnheim, 42 to 58 years; Weiss, 51 years; Hock, 62 years). Nevertheless, it is most frequent after 2 years and above all between 10 and 25 years. We have notes, however, of several cases between 30 and 34 years (Leber, Nettleship, Poncet, Gérin-Roye, Haab, Ulrich)."

Hill Griffith [2] found in 32 collected cases of tubercle of the iris the average age of the patient was 12 years, the youngest being 4 months and the oldest 52 years.

Pechin [3] states that tubercle of the iris is most frequently met with between the ages of 5 and 25 years.

Of the 18 cases recorded at the end of this paper the youngest was 8 months and the oldest 56 years:

2	were under 1 year.				
4	between	1	and	2	years.
3	..	2	..	3	..
1	..	3	..	4	..
1	..	4	..	5	..
1	..	5	..	6	..
1	..	8	..	9	..
2	..	9	..	10	..
1	aged	14			
1	..	18			
1	..	56			

So that 15 of the 18 cases were under what Hill Griffith gives as the average age and only 3 over.

(1) *Thèse pour le Doctorat en Médecine, Paris*, 1886.
(2) *Trans. Ophth. Soc. of U. K.*, X, 1890, p. 84.
(3) *Gaz. hebdomad. de Méd. et de Chir.*, Jan., 1900.

With regard to the influence of sex in connection with tuberculosis of the eye, Wojtasiewicz (1) says speaking of all classes of cases that "Sex apparently has no influence in the etiology, the two are equally liable, there being if anything a slight predominance in favour of the female sex." He mentions that out of 20 cases of tuberculosis of the conjunctiva 13 occurred in females.

Bossis (2) in reference to tuberculosis of the iris says: "The sex has not a great influence from the etiological point of view, it is, however, slightly more frequent in the female sex."

Of the 18 cases of intra-ocular tuberculosis recorded in this paper the greater tendency of the female sex is shown by 12 having been females and 6 males.

Hill Griffith (3) in an analysis of a series of cases of tubercle of the iris found the disease was confined to one eye in 20 cases and that in three both eyes were affected. Of the 20 cases in which one eye was involved the left was affected 14 times and the right 6 times.

In the writer's 18 cases of intra-ocular tuberculosis, the preponderance in favour of the left side, found by Hill Griffith, is not borne out. In one case both eyes were affected, in 11 the right eye and in 6 the left.

Localization of tuberculous disease in a bone or joint frequently seems to be determined by some slight injury or blow, it being probable that the delayed or obstructed circulation resulting from the injury has allowed of the lodgement of bacilli in the locality.

It might reasonably be expected that some injury to the eye would often be the precursor of intra-ocular tuberculosis, and it was so in the cases quoted below. It must, however, be admitted that in cases of intra-ocular tuberculosis a history of local injury has not often been recorded. Possibly it might have been more frequently elicited if special inquiry had been made.

In a case of tubercle of the iris in a boy, aged 8, recorded by Wolfe (4) in 1882, there was a history of affected eye having been struck and subsequently swollen a month previous to a white swelling being noted on the iris. The eye was excised and examined by Hirschberg, who pronounced the disease to be tuberculous.

W. J. Collins (5) in 1889, recorded the case of a boy, aged 9, who a week after being struck on his left eye by his

(1) *Thèse pour le Doctorat en Médicine, Paris*, 1886.
(2) *La Tuberculose de l'iris*, Paris, 1893.
(3) *Loc. cit.*
(4) *British Med. Journal*, 1882, I, p. 299.
(5) *Trans. Ophth. Soc. of U. K.*, IX. 1889, p. 110.

brother developed several small pinkish-grey nodules on the iris. He had been seen the day after the injury and there was no perforating wound. Apart from deafness, dating from birth, his health was in other respects good.

Allan T. Haight (1) of Chicago, who is a strong believer in the influence of injuries of the eye as a cause of tuberculosis, recorded in 1902 the case already referred to, in which there had been a contused wound at the outer canthus preceding tubercle of the choroid; and also the two following. It will be seen that the interval in all these three cases between the receipt of injury and the appearance of the disease in the eye is considerably longer than in Wolfe and W. J. Collins' cases. His first case is that of a girl, aged eight, who had tubercule of the iris, the diagnosis being confirmed by microscopical examination and the finding of bacilli after the eye had been removed. Two years previous to the commencement of the affection, the eye had been struck with a rattan whip, there was considerable ecchymosis and swelling which took several weeks to subside. The other case was that of a boy, aged 14, who in his left eye had optic neuritis, and eight or ten circular nodules, yellowish white in the centre, situated in the choroid around the disc which were diagnosed as tuberculous. A year previously he had been struck between the eyes by a stone, the septum of his nose being broken and the eyes bloodshot and inflamed. The eye was enucleated, and eight months later there had been no other manifestations of tubercle.

Case 15 recorded in the table at the end of this paper; a child aged two years and nine months with tuberculosis of the iris and ciliary body, 18 months previous to the appearance of the affection was struck on the eye by a cricket ball which caused considerable subsequent discoloration.

(3) There can be little doubt that the most frequent way in which the eye becomes infected with tubercle is by the blood stream. Tubercle bacilli carried by the blood would most likely be arrested and so capable of starting foci of disease in the eye, where anastomosis of vessels occur, where its capillary plexuses are finest, and where abrupt bends take place in the vessels.

Hence it is not surprising to find that in tubercle of the iris the nodules characteristic of the disease generally appear first near its pupillary or ciliary margins, *i.e.*, in the regions of the anastomosis of its blood vessels known as the larger and lesser circle of the iris.

In the ciliary body the copious vascular plexus of the ciliary processes situated between their epithelial covering and

(1) *American Medicine*, Feb. 8, 1902.

the ciliary muscle is the site at which the affection most frequently starts. In the choroid the close capillary plexus forming its inner layer is the usual seat of primary election.

Intra-ocular tubercle commencing in the retina is of rare occurrence, but when it is met with, the starting point is generally in the nerve head just inside the lamina cribrosa, where the retinal vessels make an abrupt bend in passing into the interior of the eye.

(To be continued.)

THE COMPARATIVE EFFICIENCY OF SILVER NITRATE, PROTARGOL, AND ARGYROL.

BY

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Every summer an epidemic of acute muco-purulent conjunctivitis breaks out in Palestine and Egypt, caused chiefly by the Koch-Weeks' bacillus. During this epidemic many hundred cases present themselves at the British Ophthalmic Hospital in Jerusalem. I have in consequence had ample material to make a comparative examination of the therapeutic effects of silver nitrate, protargol, and argyrol in the treatment of this disease. For many years silver nitrate has been exclusively used at this Hospital, and it has given excellent results. Long experience has shown that it cannot be safely used in a stronger solution than 3%, and a 2% solution has generally been employed. A 2% solution of silver nitrate, even if neither neutralised nor washed out, never causes any irritation, nor do the lids, even in infants, ever show any signs of cauterisation. Any solution stronger than 3%, unless at once neutralised with salt solution, has a caustic action, leaving a faint film of destroyed epithelium. This is especially the case with infants, who form the majority of the cases. Accordingly, in making these tests, a 2% solution of silver nitrate was always employed. In adults the silver solution was neither washed out nor neutralised. In infants the eye was washed out with boric lotion, after the application of the nitrate. Protargol and argyrol were used in a 33% solution (33 grammes in 100 grammes of water). The solution was freely used and the excess was left in the eye. The solutions were always applied

by means of small pellets of absorbent wool held in catch forceps. Drops for home use were always given—silver nitrate in 0.2% strength, or argyrol or protargol in 5% strength

These comparative tests, which were made in the summer of 1905, were carried out as follows:—cases were chosen in which the disease was in an early stage, and the two eyes nearly equally affected. One drug was applied to the right eye, another to the left, while the third was given for home use. The next day the eyes were inspected, and the differential treatment continued day by day until, either one drug established a superiority or it was certain that both were having an equal effect. Many of the patients were never seen again: probably the first application cured the case.

Forty-two cases in which silver nitrate was tested against protargol were followed up to a complete cure. The results were as follows:—

Protargol superior in 62% of the cases.
Silver nitrate superior in 10%.
Equal result in 24%.

In many of the cases in which protargol proved the better drug the difference was not great, but it was sufficient to demonstrate its superior therapeutic action.

In twenty-two completed cases, protargol was tested against argyrol with the following results:—

Protargol proved superior in 50% of the cases.
Argyrol proved superior in 0.45% of the cases.
Even result in 49.45% of the cases.

Or shortly: in half the cases the effect of the two drugs was the same, and in half, argyrol proved to be inferior in therapeutic action to protargol.

In many of the cases in which protargol gave the best result, the difference in its favour was very pronounced; in some of them the "protargolised" eye recovered after two to three days of treatment, whereas there was still a discharge from the "argyrolised" eye at the end of week. Some of these eyes at once recovered when protargol was substituted for argyrol. In four cases argyrol seemed to cause great irritation, a symptom which I have never seen caused by silver nitrate or by protargol. After 22 comparative tests the inferiority of argyrol to protargol had become so marked that the tests were discontinued.

In 13 cases argyrol was tested against silver nitrate. In seven of them the effects were equal, in six argyrol showed a slight superiority.

During the past summer (1906) I have used protargol for several hundred cases of acute muco-purulent conjunctivitis, and

the results have, in my opinion, been decidedly better than I obtained with silver nitrate in former years.

My conclusions are that protargol is a more satisfactory agent than either argyrol or silver nitrate for the treatment of acute muco-purulent conjunctivitis, and that argyrol is better than silver nitrate. Protargol is perfectly safe up to 33% and may probably be used in even stronger solutions. Its application causes much less pain than silver nitrate, but more than argyrol. Silver nitrate in strong solutions is a very dangerous agent. It has unfortunately become the custom in Palestine to use 10% and even stronger solutions with most lamentable effects. These results have been obtained in conjunctivitis caused by the Koch-Weeks' bacillus, and do not in any way contradict the results obtained by others who have tested the colloid silver salts upon gonorrhœal conjunctivitis. There are several cases in the summer epidemic in which the gonococcus is present in large numbers, but they almost invariably lead to the non-ulcerative cases upon which this investigation was made.

ARGYROSIS, INCLUDING A PRELIMINARY NOTE ON THE ACTION OF SILVER SALTS.

BY

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My study of this subject has immediate reference to the behaviour of nitrate of silver when applied to the conjunctiva; the manner in which it produces the stain we are familiar with as argyrosis; and the nature of the chemical changes which take place.

Several views have been advanced to account for the staining. One, perhaps the most popular, sought the essence of the reaction in the decomposition by light of a hypothetical silver proteid compound, but we cannot hold such a theory at the present day in view of our extended knowledge of proteids; for it has been shown, that proteids from which all trace of salt has been removed, give no reaction with silver nitrate. It would serve no useful purpose to go into the other theories, suffice it to say that it has now been definitely shown by two quite independent observations, that the all-important element in determining

the stain is the chlorine of the soluble chlorides, which exist so abundantly in the inter-cellular material of the tissues generally and less so in the protoplasm of cells, but which is absent altogether from normal nuclei. It is this chlorine that determines the distribution of nitrate of silver when it is applied to the conjunctiva; and the writer has proved to his own satisfaction by experiments on the penetration of nitrate of silver into colloids (egg albumen, gelatine, &c.) that not only is the distribution influenced, but the rate of penetration also, and the latter in such a remarkable way that it can be expressed almost as a law as follows:—"that the rate of penetration of a soluble silver salt into a colloid is, other things being equal, directly proportional to the chlorine in the latter, capable of reacting with the silver salt." The depth of penetration from similar experiments he has found to be dependent on the strength of the silver solution solely. It is not influenced by the chlorine. For those who are not quite familiar with what happens when nitrate of silver is allowed to penetrate into gelatine or egg albumen, it may be said that the precipitated chloride of silver is not deposited uniformly, but in layers, and Ostwald has explained this by assuming that precipitation begins only when the critical concentration of the advancing solution is reached, and continues until the solution is brought back to the metastable condition; when this has taken place another development of the labile condition obtains, and thus another stria after an inter-striate zone is formed. As the silver salt becomes more and more dilute, critical concentration is attained later and later, and so new striæ are separated by inter-striate zones of increasing width. The writer does not pretend to infer that what takes place in these laboratory experiments occurs in a similar manner in the case of a living membrane such as the conjunctiva, but such experiments are suggestive, and throw a good deal of light upon the action of nitrate of silver. And the writer believes that something very similar occurs in practice, although, of course, the distribution of the chloride of silver in the conjunctiva is much less regular and uniform than in the case of the gelatin.

In view of what has been said, I had better allude to the seat of the stain at this point. This has been given variously by different observers, as in the lymphatics (Stephenson) and elastic tissue (Grossmann). The distribution of nitrate of silver in the conjunctiva is influenced, as we have seen above, by the soluble chlorides which by chemical affinity attract the nitrate along those channels in which the halogen is found in greatest proportion. The extent to which the nitrate obeys this influence is dependent on the strength of the solution applied. In this way, to my mind, the apparent discrepancy between two observations

which are both correct in measure, is to be accounted for, as a stain will be produced wherever chlorides exist, but the exact delimitation is a function of the concentration.

We know that the nitrate which has penetrated into the conjunctiva is there converted into chloride of silver, AgCl. The alteration in color of this on exposure to light we are all familiar with, how a light brown color changes to dark olive brown which eventually becomes greyish-black. The brown coloration is either a lower chloride of silver (argentous chloride) or an oxychloride, and as to the greyish-black stain that eventually remains, the writer is not quite certain as to whether this is the black oxide of silver, or metallic silver, it is usually put down to the latter. The writer has noticed that corneal stains persist longer in their brownish stage than those of the conjunctiva. Why, he cannot say, presumably the difference in the circulation has something to do with it. If the black stain is an oxide, then the term reduction staining should cease to be applied to the process of staining by nitrate of silver.

The bluish-white pellicle which follows the application of nitrate to the conjunctiva is not coagulated albumen, as is usually supposed, but chloride of silver deposited in the structure of the membrane, and this leads one to add a remark as to the form of application which is most likely to be followed by staining. The writer's experience is in favour of drops, and the explanation, I believe, is as follows:—a strong solution of silver nitrate (15 gr. to 1 oz.) will be precipitated in the cells to such an extent as wholly to destroy their vitality—they are cast off together with the chloride they contain, and in this way the greater amount of silver chloride is got rid of. Some nitrate, however, penetrates deeper, but the critical concentration, after the initial precipitation, is insufficient to determine a deposit of chloride in the cells, in sufficient quantity to destroy them (weak solution). This chloride undergoes the change above described. It is precisely this incapacity on the part of a weak solution of nitrate of silver to be precipitated in the cells in sufficient quantity to destroy them, combined with the frequency of application, that makes the weak solution most potent in causing a stain.

To recapitulate briefly then as far as argyrosis is concerned:

(1st) The essential element in determining the stain is the soluble chlorides of the tissues.

(2nd) It is chloride of silver that is decomposed by light, not an albuminous material.

(3rd) The soluble chlorides influence the rate of penetration of silver nitrate.

(4th) The depth of penetration is a function of the concentration of the silver solution.

(5th) The seat of the stain is determined by the soluble chloride, and is also dependent on the strength of the solution.

(6th) The brown stain is either argentous chloride or an oxychloride of silver.

(7th) The black stain is either metallic silver or the black oxide, probably the former.

(8th) Drops are more potent in causing a stain than an application of a stronger solution by the brush.

I should like to add a word upon the organic preparations of silver.

From my experiments, which were undertaken with a view to ascertaining their penetrating power, as compared with solution of nitrate of silver, I must confess that my former faith in them, which never was very great, has now almost ceased to exist. One cannot go into them individually here, in fact, I have not tested them all yet, but one can speak of argyrol, and of its ally collargol, which are, perhaps, the most disappointing specimens of the lot. The penetration of a 20 per cent. solution of argyrol as compared with weak nitrate is practically *nil*, and one was not surprised to find this, as the molecules of these organic silver compounds must be large, and if so, must exert a powerful influence on the action of the body they collectively represent. Then again, we know that organically combined silver is very inert as compared with the inorganic form. The amount of silver such bodies contain is no criterion of their therapeutic utility. The all-essential point is, can any of the large amount of silver enter into a reaction whereby it changes its electrical state and stability from that of its initial to that of its final state. If so, then it has some potential energy behind it. Argyrol does not react with a soluble chloride, and most of the silver is deposited as such on adding a dilute acid. I believe it is wholly inert in the conjunctival sac, or at any rate almost so. Its intense colour is a false expression of its energy. I have read of an experiment which consisted in placing a piece of catgut in a solution of argyrol, and after some hours finding it had percolated through and through. The experiment was to show its intense power of penetration. Untwist a strand of catgut and note the fibres it is composed of, and see how absurd it is to assume great penetrative power on the part of a liquid which finds its way between a few fibres of catgut. I think the time has come for us to cease playing at therapeutics, and to cast out of our pharmacopœia a lot of worthless material. Argyrol may have a mechanical effect. I do not deny this, and its sedative action is due to the large amount of silver it contains (metallic silver is sedative in its action), but when this is said I believe we have

summed up argyrol. It is interesting to note the comparative rarity of staining by argyrol or any other organic silver compound. (Protargol gives a reaction with a soluble chloride, so I do not include it.) One is gratified to see from the report of the special committee appointed by the British Medical Association to investigate the bactericidal action of the various silver compounds, that their results are in accordance with those of the writer of this paper.* Approached from an entirely different standpoint, they are led to conclude that the amount of silver a compound may contain is no criterion of its bactericidal power, and the same conclusion the writer would extend to properties other than bactericidal. I am quite aware, judging from the extensive literature on the therapeutic uses of the organic silver salts and the praise that has been accorded them, that my ideas rank with those who are in the minority, but they are based on convictions which, I trust, are well grounded, and one's remarks are presented with all respect to those who have laboured in the same field with more favourable results.

I for one shall think twice of casting aside, and replacing with any such material as argyrol or its allies, the time-honoured nitrate of silver, which has rendered such signal service in ophthalmology, and which is ever on the alert to enter into some reaction whereby its electrical state and stability of its ions are altered. Herein lies its virtue, as far as I can see.

References :—

Achard and Aynaud.—*Compt. rend.*, 1906, 142; 1571—72.
Macallum.—*Proc. Roy. Soc.*, 1905, 76 B, 217—229; 1906, 77 B, 165—192.
Hausmann.—*Zeit. anorg. Chem.*, 1904, 40, 110—145.

CLINICAL, PATHOLOGICAL, AND THERAPEUTICAL MEMORANDA.

A CASE OF ACNE ROSACEA CORNEÆ.

BY

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G. W., æt. 40 years, outfitter, applied first 15th April, 1905. He is an undersized man, prematurely bald, hair black, skin shining, with well-marked acne rosacea extending over the nose and both cheeks.

When first seen by my assistant he had patches at the lower limbus of both eyes, resembling phlyctenular keratitis. He was treated with yellow ointment and hot fomentations, and in a

*For abstract, see THE OPHTHALMOSCOPE, October, 1906, page 584.—EDITORS.

few days a note states that the patch in the left eye had almost disappeared, both eyes being more comfortable. Three days later there was still considerable vascularity, the patches were smaller, and there was no ulceration.

Four days later the condition of the right eye appeared to favour the diagnosis of inter-stitial keratitis. The opacity, still quite small in area, has advanced further toward the centre of the cornea, and has running towards it what appears to be a typical "salmon patch." The left still presents the appearance of phlyctenular keratitis.

The man continued under my care until late in the summer. The photophobia was always very great. The disturbance in the left cornea advanced to its centre, and a definite excavation formed. This was treated with xeroform, and left a dense central opacity. The leash of vessels which ran into the opacity, I divided with great benefit, more than once, and, finally, in October, he was left with a minute yellow speck over the centre of the left pupil, surrounded by an extensive nebula. The right eye had a diffuse nebula over the lower half of the cornea with an interstitial band of vascularity running inwards toward its centre.

In March, 1906, I saw him again. The eyes had given but little trouble during the winter, and he had been able to attend to his business, the right eye was now affected much as its fellow had been last year. A leash of vessels ran to the centre of the cornea terminating then in a grey-red knob. I treated him with a dilute solution of dionin and hot boric fomentations, and divided the invading vessels twice, and also applied the actual cautery to the central boss with benefit. In the middle of April, after a walk in a high wind, the right eye was again injected, with a "salmon patch" at the internal limbus, and toward the end of May another attack of injection came on with a fresh leash of vessels running towards the nebula.

Remarks.—Since seeing the case shown by Sydney Stephenson* at the Ophthalmological Society in 1906, and reading the article on Keratitis ex acne rosacea, by Schirmer, Vol. IV, No. 10, of THE OPHTHALMOSCOPE, I have no doubt that my case belongs to the same category. My patient had no iritis, the conjunctival infection was always severe, and with it there was intense photophobia, necessitating the wearing of dark smoked protectors. He certainly had "a superficial and relapsing keratitis showing an undoubted similarity to scrofulous corneal inflammation," and he had, besides, acne rosacea. Seeking a more bracing climate he left Bedford in June, and I did not see him again until December 5th,

*Vide *Trans. Ophthalmological Society*, Vol. XXVI (1906), p. 47, abstracted on p. 29 of the present issue.

1906, when he paid me another visit. I found the face perfectly clear, save for a slight redness on the nose. There was no conjunctivitis whatever, nor photophobia; the corneæ had cleared considerably, but still showed the severity of the past trouble by the presence of many nebulæ, which, however, seemed to be losing their density.

NOTES ON A CASE OF TONIC CONTRACTION OF THE RIGHT FRONTALIS MUSCLE.

BY

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The following case illustrates a rare anomaly of innervation. E. B., aged 24, a Jewess, exhibits a rather striking asymmetry of the face which, on closer examination, is found to be due to

a spastic condition of the right frontalis muscle. As seen in the photograph, the right eyebrow is higher than the left, its outer half especially being raised. The forehead is wrinkled above the raised eyebrow, but otherwise smooth. The right palpebral

fissure is wider, and also the fold of skin covering the upper lid, which is distinct in the left eye, is almost obliterated. On closing the eyes gently, the contraction of the frontalis subsides, and returns only synchronously with the innervation of the levator palpebræ on the eyes being opened. The only other motor symptom to be noted at times is a slight twitching of the left corrugator supercilii. The right pupil is slightly larger than the left, but the pupillary reactions and all other ocular functions are normal. A general examination also (Dr. Fürth) revealed no changes, especially no signs of hysteria.

The history of the patient is that she has been suffering from ill-defined pain in the left side of the head during the last two years, and that the eye-condition is dependent upon the pain; indeed, I once saw the patient in a free interval when there was no pain and no contraction of the frontalis. When on that occasion she was asked to raise only the right eyebrow, she could not do it or, at least, she did not do it, but contracted both frontales in the usual way.

Remarks.—An organic irritative lesion seems out of the question.

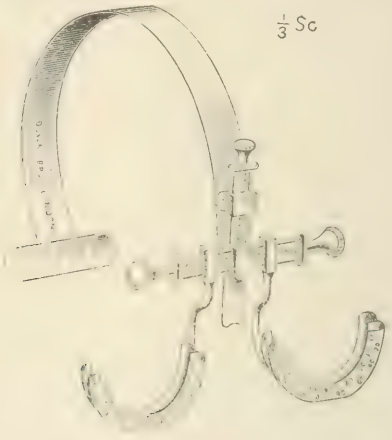
I have seen a few instances of "emotional" one-sided innervation of the frontalis in normal subjects. But the following three conditions deserve special consideration in an attempt to arrive at the nature of the case. In the first place, ptosis, whether it be the hysterical flaccid variety or that due to organic disease, may give rise to an involuntary compensating action of the corresponding frontalis. Emphasis, therefore, must be laid upon the absence of ptosis in the present case. An abnormal congenital association would explain the remarkable parallel action of both muscles; however, this explanation can hardly be accepted, considering the periods during which that association is absent. The voluntary contraction of one frontalis is a rare phenomenon; yet, I am inclined to account for the present case by assuming that the patient possesses this faculty which, through a morbid mental condition, she is led to abuse.

NOVELTIES.

A NEW TRIAL FRAME FOR CHILDREN.

The illustration shows a new form of frame for trial lenses for use with children, suggested by Mr. F. P. S. Cresswell, of Cardiff. The difficulty with the ordinary form of trial frame is that when applied to children, the bridge of the nose is not

sufficiently prominent to afford the necessary support, and the whole arrangement is inclined to slip down. The present form obviates this difficulty, as the frame is entirely dependent on the spring band which grasps the head. It is easily placed in position, and the centering of the lenses is finally accomplished



by two simple screw arrangements, the one to alter the distances between the lenses, and the other to raise or lower them. Mr. Cresswell states that after an experience of twelve months, he finds the trial frame to act well in practice.

It is made by Messrs. Down Bros., Ltd., 21, St. Thomas's Street, London, S.E.

CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

I.—CONGENITAL DISTICHIASIS.

Brailey, A. R.—Congenital distichiasis. *Trans. Ophthalmological Society*, Vol. XXVI (1906), p. 16.

A. R. Brailey, describes a case of distichiasis in a boy, aged 14 years, where the accessory cilia, present in both upper and lower lids, formed a single row of delicate, almost colourless, hairs, having about one-half the length of the normal cilia. From the latter they were separated by the entire width of the inter-marginal space. The orifices of the Meibomian glands

were absent. With the exception of a couple of accessory bicuspid teeth in the right lower jaw, the patient showed no other anomaly of development. A bit of tissue, removed from the centre of one upper lid, examined microscopically, showed marked papillary hypertrophy, an adenoid and vascular submucous tissue, and epithelium of the squamous type. The tarsus, normal as regards thickness, density, and structure, contained the usual number of vessels and nuclei. There was no trace of the Meibomian glands, and no evidences of any morbid process, such as might have led to atrophy of the glands in question. To his own case Brailey adds brief notes of four others, met with by Fuchs in the Vienna *clinique* during the last twenty years, in patients aged respectively 17, 19, 40, and 12 years (3 males and 1 female). It may be noted that in one of these instances, that of a male aged 12 years, the grandfather and a maternal aunt were stated to have been affected with the same malformation. S. S.

II.—EPITARSUS

(1) Schapringer, A. The varieties of epitarsus (Ueber Varietaten des Epitarsus) *Centralbl. f. prak. Augenheilkunde*, May, 1905.

(2) Schapringer, A.—Another case of epitarsus. Ein weiterer Beitrag zur Casuistik des Epitarsus. *Centralbl. f. prak. Augenk.*, October, 1905.

(1) **Schapringer** divides these cases into two classes, the "monstrous" and the "shadowy." The monstrous form is that condition where there is a large tumour projecting from under one or other lid and hindering the proper development of that lid, which is, therefore, usually colobomatous. The shadowy cases are those when the abnormality is either very small, so as not to alter the normal contour of the lid, or else is represented merely by a more or less fine scar line. He cites cases of both forms. His explanation of this peculiar formation is an intrauterine adhesion of the amnion, with the developing lid forming bands, which either disappear, leaving scars, or else remain to form the tumours known by this name. A. Levy.

(2) **Schapringer** reports a further case of this interesting condition, which differs in no appreciable respect from those previously reported in the *Zeitschrift für Augenheilkunde* in 1899 and in the *Centralblatt* in 1905. A. Levy.

III.—IRREGULAR LENTICULAR ASTIGMATISM.

Nuel.—The etiology and pathogenesis of certain forms of irregular lenticular astigmatism. (Etiologie et pathogénie de certains astigmatismes irreguliers de siège cristallinien.) *Revue générale d'ophtalmologie*, 31 août, 1905.

"Cases of well-marked amblyopia are encountered which are due to irregular astigmatism of lenticular origin. The cornea is normal, sometimes there is a trace of opacity, though insufficient to produce amblyopia; the corneal curvature is normal."

In a very interesting article, **Nuel** defends the thesis that such irregular lenticular astigmatism without actual opacity, so well known to every oculist, is closely related to anterior polar cataract, in so far as both are most frequently caused by ophthalmia neonatorum. Nuel combats the doctrine that anterior polar cataract is caused by long apposition of the lens capsule to the back of the perforated cornea, and maintains that the cataract may occur even when there is no perforation at all. Owing to the thinness of the infantile cornea, and the shallowness of the A.C., the products of micro-organisms penetrate the A.C. and set up iritis; perforate the capsule and irritate the epithelium. The latter proliferates and forms the laminated fibrillary tissue which constitutes the cataract. A lesser degree of inflammatory action leads to irregular astigmatism without appreciable opacity.

ERNEST THOMSON.

IV.—NEW TEST-TYPES.

Koster, W.—New test-types. (Neue Sehproben.) von Graefe's *Archiv f. Ophthalmologie*, Bd. 64, 3, September 16, 1906.

After a thorough practical and theoretical investigation of the different test-types in use, **Koster** has constructed types on a new and scientific principle. The essential points which distinguish them are: 1. Only a few letters are retained, viz:—E and B, P and F, and C, O and U. 2. For an alphabet he employs hooks with three branches of equal length. 3. Figures, if used, must form an angle of 60° with the horizon, this, as Koster explains in a very convincing way, is due to the arrangement of the cones in the macula. 4. Normal vision means recognition of the test-types at 10 m. distance if the lines

of which they consist have a breadth of three mm. in at least one direction (this approximately corresponds to a visual angle of one minute). 5. The degree of vision is given in decimal measure and a few intermediate values are interpolated for low visual power. 6. For quick testing a single horizontal row of optotypes are supplied. 7. The test-types are provided in two editions, for six and for four metres distance. 8. There are also reading types to be used at a distance of 50 c.m. and 30 c.m. respectively. 9. For testing vision in very high myopia he gives three types of very small letters, the smallest to be read at 5 c.m. distance only. They are photographed on glass and to be read against the sky or artificial light. 10. For testing the very lowest degrees of vision he uses a double chart with four letters only, which are recognised by the normal eye at 50 m. distance. These optotypes can be got from H. Brouwer, at London.

K. Grossmann.

V CONGENITAL HYDROPHTHALMUS

Michelsohn Rabinowitsch C.—A contribution towards the knowledge of congenital hydrophthalmus. (Beitrag zur Kenntnis des Hydrophthalmus congenitus.) *Archiv f. Augenheilkunde*, Bd. 1900.

Michelsohn-Rabinowitsch contributes in his paper the results of a careful investigation into the pathological anatomy of a case of congenital hydrophthalmus. The patient was a child, fifteen months old, a strong, healthy-looking boy. Along with the hydrophthalmus, there was also present an œdematous condition of the lids (elephantiasis mollis) and of the tissues in the temporal region on the side of the diseased eye. The eye was removed, hardened, mounted in celloidin, and cut in series. The microscopical examination proved of great interest, the following being the chief features of pathological importance:—The iris, though adherent in part to the cornea, showed no signs of any previous inflammation, nor was there in fact anything to be seen of an inflammatory nature in any part of the eye. The canal of Schlemn was absent altogether on the nasal side, and almost, if not quite, obliterated on the other side. All the parts of the eye presented a state of hyperæmia. The ciliary nerves showed a hyperplasia of the perineurium and endoneurium along with atrophy of many of the nerve fibres.

As regards the etiology of the case, the theory is put forward, that the hydrophthalmus and the œdema of the lids, &c., were all due to the same cause, *i.e.*, the changes in the ciliary nerves.

These are supposed to have led to paralysis or paresis of the vasomotor fibres in the nerves, hyperæmia of the parts supplied, an increased flow of lymph through the ligamentum pectinatum with consequent induration of the angle of filtration, and rise of tension. In support of this view, Michelsohn adduces various other cases presenting similar pathological changes.

Finally, it should be mentioned, that iridectomy was performed before enucleation, but with only slight temporary effect on the tension. Microscopic examination of the part showed that the root of the iris had not been detached from the cornea and was still adherent to it. PERCIVAL J. HAY.

VI. THE TREATMENT OF CORNEAL OPACITIES.

Sulzer, D. E.—**The treatment of corneal opacities by physical agents (Traitement des opacités cornéennes par les agents physiques.** *Annales d'oculistique*, novembre, 1906.

Of the children afflicted with bad sight, nine-tenths owe their condition to blemishes of the cornea. The treatment of these opacities is far from satisfactory. Optical iridectomy seldom succeeds, and electrolysis is employed but little.* Corneal opacities may be divided into superficial cicatrices, on the one hand, and interstitial scleroses, on the other. The first are opacities of the cornea properly so-called; the second, for the sake of brevity, may be spoken of as corneal sclerosis. The treatment should differ according to the form of opacity one has to deal with.

In the course of an interesting communication **Sulzer** discusses the effect produced upon opacities of the cornea by (1) electrolysis, (2) phototherapy, and (3) radiotherapy.

(1) **Electrolysis.**—After the eye has been cleansed, and rendered anæsthetic by cocaine, the lids are separated by means of a speculum. The negative electrode consists of a bit of silver wire, 1.5 mm. in diameter, the end of which has been fused in a Bunsen flame, so that it forms a smaller or larger bead. The positive electrode, which is applied to the nape of the neck, is formed of a large zinc *plaque*, enveloped in moistened wash-leather. When the silver electrode is applied to the cornea, a fine foam forms, and by a longer exposure, the nebula is raised by small bubbles, 0.3 mm. or so in diameter, which are produced

* In England electrolysis has been used in the treatment of corneal opacities by Edgar Stevenson and by Holmes Spicer (*British Medical Journal*, September 26th, 1896.)—S. S.

between the cornea proper and the opacity. The electrodes are in communication with a table containing the resistances and measuring instruments supplied by accumulators giving a current of 110 volts. During the application the voltometer should register four to six volts. According to Sulzer, the results obtained from the electrolysis of nebulæ are good. The look of eyes presenting superficial white cicatrices is always improved. The bettering of sight, however, is not so pronounced. At the same time, acuities below 1/10 may be raised to 2/10 or 3/10, while acuities of 0.2 to 0.4 have been improved 1/10 or 2/10. Six cases are quoted by the author in support of his conclusions.

(2) Phototherapy.—The source of light is the arc lamp of Broca-Chatain, which is rich in characteristic radiations. A quartz lens, having a diameter of 40 mm. and a principal focal distance of 50 mm., is placed at a distance of 100 mm. from the lamp, and provided with a diaphragm. The eye is placed at the conjugate focus of the arc formed by the quartz lens. In order to diminish the intensity of light as much as possible, the pupil is contracted by means of physostigmine or pilocarpine. Cocaine is also applied to the eye, the lids of which, if necessary, are held apart by an assistant or by a speculum. The time of exposure is from 20 to 90 seconds. The minimum exposure must first be adopted, but when the reactional susceptibility of the patient has been determined, the duration of the sittings may be prolonged. Successive exposures are made at intervals of from one week to two weeks. Their number varies from four to twenty in individual cases. Sulzer is of opinion that short exposures at comparatively short intervals are preferable to longer exposures given less frequently. After exposure to actinic rays, reaction occurs, which is proportional to the length of exposure. This appears at a time that varies from two hours to two days after the treatment, and manifests itself by redness of the eye, lacrymation, and lancinating pains. On examining the eye during this phase with focal illumination, one observes a slight and uniform dulness of the cornea, together with ciliary redness, but these appearances vanish in the course of a few hours or of three days at the most. Employed after electrolysis in superficial and clearly defined nebulæ, or by itself in cases of sclerosis, phototherapy may cause a considerable improvement in sight. Sulzer makes the important observation that under the influence of the light treatment, tension falls, pupillary exudations become absorbed rapidly, and that posterior synechia undergo rupture. Nineteen cases are quoted in support of the author's conclusions.

(3) Radiotherapy.—No particular reaction followed the exposure of sclerosed cornea for a period of eight minutes to the

rays emitted from the anticathode of a radiogenic tube, which gave out ½ H. per minutes. The same exposure, however, produced a violent and salutary reaction in a case of trachoma. During the two or three weeks following the application of the *x*-rays a slow but sensible clearing was observed in the sclerotic corneæ. Radiotherapy, according to Sulzer, produces curative effects analogous to those obtained by the light treatment, although they are more feeble and slower. On the other hand, they have the advantage of being associated with neither reaction nor pain.

From his experiments Sulzer concludes that physical agencies are able to improve the sight of those affected with opacities of the cornea. The best application for this purpose is electrolysis combined with phototherapy for corneal opacities or phototherapy alone for sclerosis, such as follows interstitial keratitis. In timid subjects, phototherapy may be replaced by radiotherapy. S. S.

VII.—ACNE ROSACEA OF THE CORNEA.

Stephenson, Sydney.—A case of acne rosacea of the cornea. *Trans. Ophthal. Society*, Vol. XXVI (1906), p. 47.

Stephenson reports a case of rosacea of the cornea in a married woman, 40 years of age, who had been subject for six years to constipation and indigestion, and to an eruption on the face, tending to become worse in spring and better in summer. One eye had been inflamed for about two months before she was seen by Stephenson. On examination, the patient's right eye presented a greyish-white spot, 1mm. in diameter, closely resembling an ordinary phlyctenule, and lying upon the upper and outer part of the limbus. A larger, diffused, red spot was present at the lower and inner part of the limbus. The woman's nose, cheek, and chin showed a well-marked condition of rosacea, associated with pustulation The affected parts of the skin were irritable and angry-looking. After several relapses, the corneal condition eventually became quiescent, so that some six months after the case was shown at the Ophthalmological Society, nothing remained except a couple of superficial corneal nebulæ. The diagnosis of rosacea in Stephenson's case rested upon three main points :—(1) the sex and age of the patient; (2) the chronicity of the limbal changes; and (3) the co-existence of the eye trouble with active rosacea of the face. To these may now be added (4), the simultaneous improvement of both face and eye under general and local treatment.

VIII.—SUB-CONJUNCTIVAL INJECTIONS OF STERILIZED AIR.

Terson, J.—Sub-conjunctival injections of sterilized air in sclerosing keratitis of tubercular origin, and in infective marginal ulcers of the cornea. (Les injections sous-conjonctivales d air stérilizé dans la kératite sclerosaute d'origins tuberculeuse et dans les ulcères marginaux infectes de la cornée.) *La Clinique Ophtalmologique*, 25 août et 10 septembre, 1906.

J. Terson, after referring to a paper by Chesneau, in *Annales d'habilitique*, juin, 1905, "On a form of sclerosing parenchymatous keratitis, *probably* tubercular," in which paper treatment by sub-conjunctival injections of sterilized air is described, proceeds to give results which he has obtained by the same method. *Case I.*—Sclerosing keratitis of undoubtedly tubercular origin. First, injection of sterilized air caused diminution of the local irritation and of the photophobia. Second injection, after three days, stopped the lacrymation and improved the vision. After the eighth injection there was a remarkable retrocession of the corneal opacity, and, relapses apart, the case was considered cured. Encouraged by success, Terson has tried the treatment in corneal ulcers. *Case II.*—A man of 58, with a corneal ulcer which had resisted previous treatment, who suffered from hereditary syphilis and ogaena, was treated with sub-conjunctival sterilized air. After the fourth injection the patient was so much improved that he refused to continue treatment, but returned in six weeks with a relapse, which was treated similarly and successfully. *Case III.*—A man of 46, incessant cigarette smoker, with neglected teeth, had been under Terson's treatment for a year on account of repeated small infective ulcers at the corneal margin. A particularly severe relapse was treated with sub-conjunctival sterilized air. After treatment twice a week for three weeks the patient considered himself almost cured.

The method consists simply in drawing air into a sterilized syringe through a thick pad of sterile cotton wool, and injecting this sub-conjunctivally in the same manner as in the case of a solution. Terson evidently thinks well of the method, inasmuch as it is capable of bringing a local infection to an abrupt stop, but admits that relapses are more likely than with fluid injections. He is not prepared to say in what way the method brings about a cure.

ERNEST THOMSON.

IX.—ALYPIN: THE NEW LOCAL ANÆSTHETIC.

(1) Wenstaetter.—Alypin: its use in ophthalmology. *Münch. Med. Wochenschrift*, Oktober 17, 1905.

(2) Menacho.—Alypin in ocular theraputics. (La alipina en terapeutica ocular.) *Arch. de Oftal.*, Sietembre, 1906.

(3) Castresana.—A new ocular anæsthetic: Alypin. (Nuevo) anestesico ocular. *Arch. de Oftal.*, Sietembre 1906.

(4) Haass, F.—On the value of alypin in ophthalmology. (Beitrag zur Bewertung des Alypins in der Augenheilkunde.) *Wochenschrift für Therapie und Hygiene des Auges*, September 13, 1906.

(1) With regard to the anæsthetic properties of the drug, **Wenstaetter's** observations are somewhat at variance with those of Impens. The latter achieved complete anæsthesia of the cornea with a 1 or 2 per cent. solution, while Wenstaetter, in some cases was compelled to use 5 and 10 per cent. solutions. Five per cent. solutions were often found inefficient to remove foreign bodies from the cornea, and at no time did he see the complete anæsthesia which follows cocain. Nevertheless, he admits it has properties which make it superior to cocain, in that no pupillary disturbance is produced, it is less toxic, and it is cheaper. Wenstaetter also reports favourable results from its use in hay fever, its non-toxic properties permitting the frequent use of the drug. Not interfering with the size of the pupil, alypin may find a place in the treatment of glaucoma.

(2) **Menacho** has examined the action of alypin both clinically and experimentally. He tested the relative toxicity of the two drugs by subcutaneous injections on rabbits, and found that the toxicity was nearly equal, but that alypin was slightly more dangerous than cocain; instilled into the conjunctival sac alypin gives rise to somewhat severe smarting and to hyperæmia of the conjunctiva from its vaso-dilating action. This power of vasodilatation has led Köllner to consider alypin contra-indicated in operations on the iris. HAROLD GRIMSDALE.

(3) **Castresana** considers alypin as superior to cocain in its less toxicity (as far as can be judged from clinical observations) and its feeble power as a mydriatic or cycloplegic. Another point of some importance is that solutions can be boiled without undergoing decomposition. HAROLD GRIMSDALE.

(4) **Haass**, after pointing out how many of the rivals of cocain have gone under, proceeds to give unstinted praise to

alypin, which is, he says, the most formidable adversary of all. The writer's main contention is that alypin is much less toxic than cocain, and equally efficacious as an anæsthetic. It is absolutely trustworthy in the latter respect when used in 3 or 4 per cent. solutions. Haass uses it not only for minor, but also for major eye operations, and finds that its only disadvantages are a certain amount of smarting and superficial injection of the eye. He agrees with Zimmerman that alypin tends rather to lower than to raise ocular tension. ERNEST THOMSON.

X. KERATO CONJUNCTIVAL DIALYSIS.

Golesceano, C. — Kerato-conjunctival dialysis. (Dyalise Kérato-conjonctivale.) *Recueil d'ophtalmologie*, août, 1906.

Certain cases of iritis and chronic iridochoroiditis, secondary to nasal and other diseases, have been attributed to infection of the healthy conjunctival sac by toxins, which subsequently find their way by diffusion into the anterior chamber and deeper parts of the eye. To this pathogenetic theory Golesceano takes exception, and maintains that exogenous infection of the deeper structures of the eye takes place by the lympho-vascular channels and not by kerato-conjunctival osmosis.

Descemet's and Bowman's membranes, provided their respective endothelium and epithelium are intact, oppose any filtration through the cornea. In health, the sclerotic does not offer any better osmotic passage. A solution of atropine, coloured by fluorescein and instilled into the conjunctival sac of a rabbit, gives rise to maximum dilatation of the pupil in an hour's time, but aqueous humour extracted from the anterior chamber after the same interval shows no trace of fluorescein. The same result was obtained after a subconjunctival injection of methylene blue in the region of the limbus, and that even when the preliminary evacuation of the aqueous, recommended by Heisrath, was performed.

A similar negative result was obtained after subconjunctival injections of mercurial salts. Golesceano's findings do not agree with those of Tournabene and Angelucci as to alterations in the amount of albumen in the aqueous produced by pilocarpine and atropine. Golesceano found that two hours after instillation of pilocarpine, when its therapeutic effect was maximal, the aqueous gave a faint albuminous cloud with Spiegler's reagent, but a similar experiment after instillation of atropine gave a very intense albuminous reaction. J. JAMESON EVANS.

XI.—COLOBOMA OF THE EYELID.

Stephenson, Sydney.—A case of congenital coloboma of the eyelid. *Reports of the Society for the Study of Disease in Children*, Vol. VI (1906), p. 203.

Coloboma of the eyelid is one of the rarer congenital malformations of the eye. Dor and Nicolin, in the year 1888, were able to bring together only forty-six cases from the literature.

Since that date the number of published cases has risen to about 125. In the present communication **Stephenson** describes a case in a baby of three months. A quadrangular gap existed in the right upper eyelid. It involved the inner half of the lid with the exception of a small nodule at the inner end, and extended about halfway from the orbital to the palpebral margin. When the baby closed his eyes, the right cornea and pupil could be seen through the gap in the eyelid, thereby producing a somewhat weird effect (*see* fig.). The puncta lacrymalia were present, the upper one lying on the nodule mentioned above. There was no particular thickening of the palpebral conjunctiva, no lipodermoid of the conjunctiva, no dermoid of the cornea, and no coloboma of the iris. The baby, who had a small fovea sacralis, presented a tiny supernumerary auricle in front of his right ear.

Stephenson enquires how far such a deformity would be likely to predispose to ulceration of the cornea. He mentions a case (shown in the second figure) in which a young child was brought with a double coloboma of the left upper eyelid, and a perforated ulcer of the corresponding cornea. He believes that there exists a close connection between a gap in the eyelid, on the one

hand, and an ulceration of the cornea, on the other. This Stephenson regards as an argument for closing such a coloboma by operation at the earliest possible moment. G. C.

XII.—TREATMENT.

(1) Wolfiberg.—Gouty eye affections. (Gichtische Augenleiden.) *Wochenschrift f. Ther. und Hygiene des Auges*, August 23, 1906.

(2) Aubineau.—Serum-therapy in diphtheritic paralysis of accommodation. (La sérothérapie dans la paralysie diphtérique de l'accommodation.) *Annales d'oculistique*, septembre, 1906.

(3) Sylla, Bruno.—The treatment of strumous corneal ulcers with 50% solution of lactic acid. (Die Behandlung der Skrophulösen Hornhaut-Geschwüre mit 50 Proz. Milchsaüre Lösung.) *Wochenschrift f. Ther. und Hygiene des Auges*, September 20, 1906.

(4) **Davidson, J. Mackenzie.—Radium in the treatment of rodent ulcer.** *Trans. Ophthalmological Society*, Vol. XXVI, 1906, p. 303.

(5) **Rutherford, R. W.—Dionin in diseases of the eye.** *Ophthalmic Record*, October, 1906.

(6) **Francis, Lee Masten.—The treatment of acute suppurative dacryocystitis.** *Ophthalmic Record*, October, 1906.

(7) **v. Herff.—On the prevention of gonorrhœal ophthalmoblennorrhœa with sophol.** (Zur Verhütung der gonorrhoischen Ophthalmoblennorrhœ mit Sophol.) *Münch. med. Wochenschr.*, 1906, Nr. 20, und *Centralbl. f. prak. Augenheilkunde*, November, 1906.

(8) **Domec. — Pneumatic massage, a new therapeutic measure in ophthalmic practice.** (Ueber pneumatische Massage, ein neues Verfahren und Ophthalmologischen Therapie.) *Die Ophth. Klinik*, November, 1906.

(9) **Domenico, Bruno.—Fibrolysin in eye work.** (Fibrolysin in der Augenheilkunde.) *Wochenschrift f. Ther. und Hygiene des Auges*, November 29, 1906.

(1) There are two main facts in this short article by **Wolffberg.** First, that in gouty individuals lens opacities may be diathetic; and, secondly, that they are amenable to treatment, and especially to treatment by "Solurol," which is "nucleotus-phosphoric acid." Good results are obtained also in what Wolffberg calls "pseudo-chalazia" occurring in gout. Solurol is a yellowish-brown amorphous powder, slightly soluble in cold water, faintly acid, and rather tasteless. The dose given by Wolffberg is one-half gramme tablet thrice daily and not on an empty stomach. ERNEST THOMSON.

(2) **Aubineau** records a case of diphtheritic paralysis of accommodation cured by injection of anti-diphtheritic serum. As the patient had three relapses, each of which yielded rapidly to the treatment, the author considers that the case proves the incorrectness of the view that the serum can only prevent the development of a lesion, but has no further influence on one which is already established. The dose employed was at first 10 cc., but this was raised successively to 20, 30, and 60 cc.

(3) **Sylla** relates how he had been in the habit of treating not only conjunctival, but also corneal infiltrations of a strumous nature, with the mitigated stick. He had found, and still finds, this treatment satisfactory for the conjunctiva, but being dis-

satisfied with the amount of resulting opacity when the treatment was applied to corneal ulcers, he resorted to the galvano-cautery. This, however, was worse, and Sylla reverted to the mitigated stick, until a year ago he read about the use of lactic acid as a caustic for the cornea. With this he has been very satisfied. Healing takes place quickly, and the resulting opacity is very slight. The method consists in the careful application of 50 % lactic acid by means of a fine cotton swab. In the case of keratitis fascicularis, the leash of vessels, as well as the advancing ulcer, are touched with the acid, even on to the conjunctiva. The author apparently applies the acid very lightly and prefers to repeat the application, if necessary, after 48 hours, rather than risk doing too much at one sitting. Even after a second application, only a thin grey scar results. The cornea is cocainized before the application, and the after pain and smarting are combated with cold applications and atropin. Powdered dionin may be applied after 48 hours and the eye bathed with one of the ordinary lotions. ERNEST THOMSON.

(4) During the last three years **Davidson** has employed radium in the treatment of rodent ulcer with "extraordinarily" good results. The glass tubes which contain the radium allow the β and γ rays to pass with facility. The end of the tube is placed in contact with the diseased part for twenty to forty minutes, and is held in position by some simple contrivance. No further application is made for a month or six weeks. Reaction, in the shape of redness and increased secretion, usually follows some eight days after the application, and if the latter has been too prolonged, an erysipelatous blush, and even a high temperature and sickness, may result. Brief notes of fourteen cases treated by radium are given by the author. In reference to these cases it may, perhaps, be said that in individual cases the number of applications ranged from one to twelve, and averaged 5·5. All were examples of rodent ulcer except two—one a recurrence of an epithelioma, and the other a growing and bleeding mole.

(5) **Rutherford** has used dionin for eighteen months and has obtained good results. His experience has convinced him that the most severe ocular pain may be relieved by the proper use of a 2 per cent. to 5 per cent. solution or ointment of dionin. The author has also found dionin useful in keratitis (ulcerative or otherwise), in iritis and irido-cyclitis, and in secondary glaucoma, due to synechiæ.

(6) By a series of experiments on normal subjects, **Francis** has convinced himself that certain agents, as ichthyol, unguentum Crede, mercury ointment, and iodine, when rubbed into the overlying skin, find their way into the lacrymal sac. In less

than thirty minutes the presence of the remedy employed could be demonstrated in the secretion of the corresponding nostril. These observations have led Francis to treat cases of acute suppurative dacryocystitis by massage, every two hours, of the skin lying over the sac with 50 per cent. mercury ointment or unguentum Credé, together with the constant application of an ice-bag to the inflamed parts. The amount of pus under these means decreases to a minimum or disappears altogether in from three to five days. The probe is employed, if necessary, at a later stage.

(7) Among 3,009 babies treated prophylactically with 10 % protargol, not one developed a primary infection and two only (0·06 %) a late infection. Protargol is accordingly equal in preventive power to silver nitrate, but is at the same time less irritating. 650 babies were treated with argyrol, although the so-called silver content of that American preparation is less than the manufacturers assume. Sophol (the Bayer Co.) is formonuclein silver. It contains 20 per cent. of silver in masked form. It is readily soluble in water, which must be cold. Owing to the action of light, it must be kept in non-actinic bottles. It has been found that 10·92 % of sophol still irritates the eye, but with a 9·1 % solution that is not the case. In silver content, sophol is equal to protargol, but it posseses far greater disinfectant powers than the latter. Of 1,700 newly-born children treated with argyrol and sophol, one alone developed an early infection, which was probably of ante-partum origin. Therefore, of 4,709 children whose eyes were treated with an albuminoid silver preparation—to wit, protargol, argyrol, or sophol—instead of silver nitrate—one only showed an early infection and two a late infection—0·06 %. In other words, the percentage thereby obtained was smaller than that observed in the same institution with silver nitrate. S. S.

(8) **Domec** applies to the orbit a cup with an air pump attached, and finds, that by drawing the eye into the cup 50 to 200 times, he relieves pain, although the procedure at the time is accompanied by some discomfort. He believes the beneficial results are due to traction upon the ciliary nerves, or to an effect upon the circulation in the eye—possibly transmitted to the intracranial sinuses. PERCIVAL J. HAY.

(9) Fibrolysin, a compound of thiosinamin and sodium salicylate, is employed for the purpose of dissolving cicatricial tissues. **Domenico** reports seven eye cases treated by these means. They included leucomata following hypopyon-keratitis (3), corneal infiltrations of trachoma (2), specific papular iritis (1), and exudative choroiditis (1). The results in every instance were good—leucomata were more or less absorbed, specific

papules disappeared, and choroiditic exudations were absorbed, with corresponding improvement in sight. The fibrolysin was applied by intra-muscular injection into the gluteal, dorsal, or lumbar regions. The injections, given daily or every other day, ranged in number from 10 to 18, and caused neither pain nor local infiltration. A diuretic action and an improvement in general health were observed to follow their employment.

S. S.

XIII.—PARALYSIS OF ACCOMMODATION AND IRIDOPLEGIA.

v. Hippel, E.—On rare cases of paralysis of accommodation and of iridoplegia. [Ueber seltene Falle von Lahmung den Akkommodation und von Pupillenstarre. *Klin. Monatsbl. f. Augenheilkunde*, Juli-August, 1906.

v. Hippel reports three cases of continued paralysis of accommodation without implication of the sphincter pupillæ, in which the cause of the complaint remained obscure. The patients were aged 20, 15 and 27 years, and it may be mentioned that the last two were suffering from epilepsy. v. Hippel thinks that only a nuclear lesion would account for the condition.

He further relates the case of a hystero-epileptic man, aged 26, with paralysis of accommodation and of the sphincter pupillæ (maximal mydriasis), occurring sometimes in one, sometimes in both eyes, followed after a few days by a perfectly normal state. Deception on the part of the patient was to be excluded. Lastly, v. Hippel mentions two tabetic patients. One had bilateral irido and cycloplegia with mydriasis. On looking towards the left, the left pupil contracted slowly to a certain extent. The other patient exhibited a unilateral Argyll Robertson pupil of 5mm. diameter. C. MARKUS.

XIV.—INJURIES TO THE EYE BY ELECTRICAL CURRENTS.

(1) Junius.—On injuries to the eyes, especially those due to strong electric currents. [Ueber Unfallverletzungen, insbesondere Augenerkrankungen durch elektrische Starkstrome.) *Ophth. Klinik.*, Juni 16, 1906.

(2) **Lundsgaard, K. K. K.—Two cases of injury to the eye due to electrical short circuit.** (Zwei Fälle von Verletzungen des Auges durch elektrischen Kurzschluss.) *Klin. Monatsbl f. Augenheilkunde*, Juni, 1906.

(1) **Junius** presents a short review of what is known regarding the effects of strong electric currents on the body in general, and the eyes in particular. He observes, that each case must be considered by itself, and in judging of the gravity or danger of any particular injury, it is necessary not only to take the voltage into account, but also the resistance, direction and kind of current, whether continuous, alternating, or rotatory; the duration of exposure, and, lastly, the individual susceptibility of the patient. In many cases it may be difficult to decide whether the condition of the patient is directly attributable to the current, or whether it is due to fright (traumatic neurosis). In some instances the injury is followed by serious organic lesions of the nervous system, *e.g.*, disseminated sclerosis, progressive paralysis, tabes, etc., which explains certain eye symptoms appearing sooner or later after the accident. Electric currents and lightning have been observed to cause ptosis, pupillary changes, keratoconus, cataract, hæmorrhages into the anterior chamber, vitreous, retina, choroid and optic nerve; also blindness from changes in the cortical centres of vision. PERCIVAL J. HAY.

(2) As a result of the short circuit of an electrical current of 550 volts. **Lundsgaard** observed in the first of his two cases spots of chorio-retinitis which formed a slightly curved streak passing from the disc outwards. Retinal detachment supervened as a secondary change. The second patient suffered for some time from flashes of light and a violent conjunctivitis electrica; there occurred, in addition, a small, grey, ring-shaped corneal opacity which perished after the other symptoms had disappeared.

C. MARKUS.

XV.—AFFECTIONS OF THE OPTIC NERVE AND DISSEMINATED SCLEROSIS.

Fleischer.—Affections of the optic nerve and disseminated sclerosis. (Ueber Sehnervenleiden und Multiple Sclerose.) *Die Ophth. Klinik*, Oktober, 1906.

Fleischer has made a study of the cases of affections of the optic nerves that had been seen at the Tübingen klinik during the last 30 years. In a large number of instances he was

successful in obtaining the subsequent history. The results lead him to say that retrobulbar neuritis, which disappears rapidly, is often an early symptom of disseminated sclerosis, especially in young persons, so much so that we are justified in suspecting the disease, if in a young individual we find an acute affection of the optic nerve followed by rapid recovery, and no other plausible cause for the condition. As regards the cases of chronic optic neuritis, post-neuritic atrophy, simple atrophy, choked disc, the investigations are not yet complete, but so far not a single case of disseminated sclerosis has been found amongst them. PERCIVAL J. HAY.

XVI.—THE OCULAR FACTORS CONCERNED IN SPINAL CURVATURES AND TORTICOLLIS.

(1) **Van der Brugh, J. P.**—Torticollis ocularis. *Ned. Tijdschrift v. Geneeskunde*, 1905, II, No. 6, p. 365.

(2) **Wilson, H. Augustus.**— The ocular factors in the ætiology of spinal curvatures. *New York Medical Journal* incorporating the *Philadelphia Medical Journal* and the *Medical News*, July 28th, 1906.

(3) **Geisler, O.**—Strabismus sursum vergens with consecutive torticollis: Cure by tenotomy of the rectus superior muscle. (Strabismus sursum vergens mit konsekutivem Tortikollis: Heilung durch Tenotomie des M. rectus superior. *Klin. Monatsbl. f. Augenheilkunde*, Oktober, 1906.

(1) **Van der Brugh's** patient had suffered from torticollis for several years, and had been treated by operation on the sterno-cleido-mastoid, and afterwards by orthopædic gymnastics, without the least success. By Van der Brugh the ocular origin of the torticollis was recognised and the condition was definitively cured by a tenotomy of the inferior rectus, by which the correct position of the eyes was secured. The author thinks this condition to be very often mistaken for a real torticollis, resulting from shortening of the sterno-cleido-mastoidens. Yet, the general practitioner may readily recognise the true nature of a case of torticollis In real torticollis the patient cannot hold his head upright for any length of time, and is quite unable to bend his head to the other side. If the condition is caused by paralysis of an ocular muscle ("ocular torticollis"), the patient can hold his head erect, and bend it over to the other side for a

long time, if only the paralysed eye is kept closed. Which eye is paralysed can readily be detected by trying to keep the head erect, first with one eye shut, and then with the other. The writer analyses several cases, mentioned in literature, in which operation upon the eye cured torticollis. It is curious that in three cases the diagnosis of the paralysed muscle was, as shown by analysis of the symptoms mentioned, incorrect, and yet operation on the apparently wrong muscle brought cure. It seems that in most cases different ways can lead to a happy result. G. F. ROCHAT.

(2) **Wilson** states that he has found it to be a safe rule in all cases of scoliosis to have them examined as to their eyes, and has found that it resulted in a report that was in accord with statements previously made. "In two cases in young children" (he says) "I kept a careful watch over them, but did not direct gymnastic or other remedial measures for a period of three months after they began to wear their correcting glasses. In both of these cases, the correction of the head tilting by wearing the correction glasses enabled them to carry the head persistently in the erect posture, thereby removing the predisposing cause of the previously existing functional scoliosis. In older patients it was always necessary to prescribe forms of gymnastic exercises and manipulations because of the alteration in the positions and action of the intrinsic muscles of the back and neck. In the patients who were beyond fifteen years of age, distinct evidences of resulting bony changes made absolute correction impossible, although the rigidity of the spine was largely removed and consequently greatly improved function was obtained."

C. A. O.

(3) **Geisler** attended a young man, aged 18 years, for a considerable upward deviation of the right eye. In order to avoid diplopia, the patient kept his head in a position corresponding to a contraction of the left sterno-mastoid muscle. There was no limitation of motion of the eye, and the angle of deviation remained always the same. Six years ago the patient had suffered an injury to the trochlear or tendon of the right superior oblique muscle, which gave rise to a contracture of the right superior rectus and to the present condition of concomitant vertical squint. To relieve this condition, Geisler had to choose between three operations: advancement of the right inferior rectus, tenotomy of the left inferior rectus, tenotomy of the right superior rectus. He decided for the latter, which resulted in a complete success. The position of the eye became normal, and the diplopia and torticollis disappeared in the course of a few days. C. MARKUS.

XVII.—MYDRIASIS AND PULMONARY TUBERCULOSIS.

Bichelonne.—On unilateral mydriasis in incipient pulmonary tuberculosis. De la mydriase unilatérale dans la tuberculose pulmonaire au début. *Ann. d'oculistique*, T. CXXXIV, p. 273, octobre, 1905.

Bichelonne records the case of a soldier, aged 20 years, with evidence of consolidation of the apex of the right lung, who came under his care for mydriasis of the right eye, which he considered to be due to irritation of the sympathetic from pressure by a tuberculous gland. He discusses the published statistics as to the occurrence and frequency of pupillary inequality (in the early stages mydriasis from irritation of the sympathetic and later myosis from its destruction) in connection with pulmonary tuberculosis, and comes to the conclusion that if the usual causes of anisocoria are excluded, the presence of unilateral mydriasis may be an important sign in the diagnosis of incipient phthisis. R. J. COULTER.

XVIII.—TRAUMATIC ENOPHTHALMOS.

Chaillous.—A case of traumatic enophthalmos. (Un cas d'énophtalmie traumatique.) *Ann. d'oculistique*, T. CXXXVI, p. 199, septembre, 1906.

Chaillous gives the history of a case of traumatic enophthalmos caused by a direct blow from the handle of a shovel, the top of which barely fitted into the patient's orbit, while its rounded end pushed the eye back. The injury was followed by abundant epistaxis and haemoptysis lasting several hours. When seen by the author, 13 days after the accident, the patient's injured eye, in addition to a typical enophthalmos, had a localised lenticular opacity in the neighbourhood of the posterior capsule, and vision was reduced to 5/7.5 with a contracted field. Twenty-one days later, after treatment with strychnine and constant current, the cataract had completely disappeared, the field was slightly larger, and the disc was a little discoloured, with its vessels slightly narrowed, but otherwise the condition was unaltered. A radiogram showed a fracture of the orbital margin of the superior maxilla, with separation and displacement backwards of its nasal process, but did not give any information as to a possible fracture of the orbital walls. The author suggests that a series of good radiograms might help to clear up some of the doubtful points with regard to enophthalmos, particularly the question as to whether the lesion is always associated with fracture of the orbit. R. J. COULTER.

XIX.—EXTRACTION OF CATARACT IN THE CAPSULE.

(1) **Smith, Major Henry.**—(1) *Archives of Ophthalmology*, November, 1905, and *Indian Medical Gazette*, September, 1905. (2) *Indian Medical Gazette*, April, 1906. (3) *Indian Medical Gazette*, August, 1906. (4) *Indian Medical Gazette*, September, 1906.

(2) **Oxley, Captain J. C. S.**—(1) *Indian Medical Gazette*, December, 1905. (2) *Indian Medical Gazette*, April, 1906.

(3) **Herbert, Major H.**—(1) *The Ophthalmoscope*, March, 1905, and *Indian Medical Gazette*, February, 1906. (2) *Indian Medical Gazette*, June, 1906. (3) *Indian Medical Gazette*, December, 1906.

(4) **Elliot, Major R. H.**—(1) *Indian Medical Gazette*, May, 1906. (2) *Indian Medical Gazette*, December, 1906.

(5) **Birdwood, Major G. T.**—*Indian Medical Gazette*, June, 1906.

(6) **Maynard, Major F. P.**—*Indian Medical Gazette*, August, 1906.

(7) **Gidney, Captain H.**—*Indian Medical Gazette*, August and September, 1906.

(8) **Newman, Major E. A. R.**—*Indian Medical Gazette*, October, 1906.

(A controversy among Indian Medical Service men with regard to cataract operations.)

(1) **Major Smith's** first paper has already been noticed in the March, 1906, issue of THE OPHTHALMOSCOPE. In his later papers no new fact of importance has been brought forward.

(2) **Captain Oxley's** first paper was also reviewed in the same number of THE OPHTHALMOSCOPE.

(3) **Major Herbert's** first article was published in these pages. The later papers continue an attack upon Major Smith's general position and upon several extraordinary statements made by him. Insistence is laid upon the value and safety of early "needlings" ten days or so after the extraction operation. Many of the patients are sent out of hospital at once with the eye bandaged for a day.

(4) **Major Elliot** reserves his opinion with regard to the main proposition. His articles consist mainly of a careful and

minute exposure of the incorrectness of numerous statements published by Smith. Incidentally some information of general interest is given.

Major Elliot's fear of the consequences of loss of vitreous is supported by the number of blind eyes which he has seen following cataract extraction, with the characteristic upward displacement of the pupil which "indicates that hyaloid membrane was ruptured at the time of operation." He refers to Herbert's description of this distortion of pupil.

In speaking of the effect of cortex, left behind in direct contact with iris, he draws a distinction between the unirritating substance which "swells up readily by the imbibition of fluid and assumes a gelatinous appearance," and the irritating cortical matter which is "stiff and unyielding." This firm cortex is more liable to produce synechiæ. Cortex was left behind in 63 out of 200 operations. Iritis followed in 3 of the 63 group, and in 2 of the remaining eyes.

Major Elliot makes a practice of removing with his forceps any floating piece of capsule which is visible after the chamber has been washed clean. This was done in 30 out of 200 operations, giving 5 small losses of vitreous. Among the remaining 170 operations there were also 5 small vitreous escapes. This small addition to the ordinary operation is much less likely to lead to large escape of vitreous than is extraction of the lens in its capsule.

He treats after-cataract by discission, with two needles, a month after extraction, with aseptic precautions, and gets no bad results.

(5) **Major Birdwood** gives his experience of 311 intra-capsular extractions. There was escape of vitreous in 47 per cent. of the earlier cases, and in 37 per cent. of the later ones. He does not think the average operator is likely to reduce his vitreous losses below 30 per cent. in this operation, yet he is "gradually getting convinced that it should be the operation of election in nearly all cases." He says, "provided the capsule is unruptured no evil effects whatever seem to follow the escape of vitreous even when in fair quantity" (! !). His percentage of success in the whole series of operations is not quite so high as when operating with capsulotomy, but in his last 50 intra-capsular operations there was only one failure, and this is the best series of results which he has yet obtained. The intra-capsular extractions were, however, only performed on selected eyes—"good, clean, healthy"—whereas the "capsulotomy cases" were in no way especially selected eyes. Major Birdwood finds Morgagnian cataracts and those with semi-fluid cortex the most easy to deliver in their

capsules. He also considers this operation the ideal one for lenses with "boggy and sticky cortex." He finds there is a great tendency for iris to become incarcerated in the angles of the wound after this operation.

(6) **Major Maynard** gives a careful report upon 175 of "Smith's operations." In 8 other eyes the operation was attempted but abandoned, as delivery could not be accomplished with the amount of pressure which was considered justifiable.

The capsule was ruptured in 30 cases, *i.e.*, in 17·14 per cent. of the operations. This accident was accompanied by loss of vitreous in 10 cases. Cortex and capsule were usually left behind. The partly displaced capsule was considered a danger, as being particularly liable to become impacted in the wound. "More than half of the indifferent, and nearly half of the bad results of the whole series of operations occurred among these 30 eyes."

Vitreous was lost 67 times, *i.e.*, in 38·28 per cent. of the operations. In 30 instances the prolapse of vitreous preceded the exit of the lens, 5 times it came with the lens, and 32 times followed it. To compare with these figures Major Maynard's vitreous loss in his latest series of 1,000 ordinary extractions was 4.3 per cent. The visual results in the group of eyes from which vitreous was lost were not strikingly different from those of the eyes which were free from this accident. This statement, however, applies only to the results at the time of discharge from hospital.

Iritis was rare; it occurred only 3 times. Prolapse of iris took place 5 times, and incarceration of iris 3 times; these figures are above the average of ordinary combined extraction. The cornea became permanently opaque in 2 instances, and there was delayed union of the wound in 7 eyes, 1 of the latter became infected and was lost.

Results: 6 indifferent and 5 failures. Four of the indifferent results were due mainly to rupture of the capsule. The other 2 eyes—though there had been no complication during operation—remained red and painful for some time, and the vision was poor. In 1 of these 2 eyes, and in 4 other cases, the pupil became drawn up, though there had been no loss of vitreous and no iritis. Two of the failures were from infection, and the other 3 from persistent low tension, with haziness of the cornea. In only 1 of these 3 eyes had there been loss of vitreous.

In 31 patients there was the opportunity of comparing the vision obtained by successful ordinary extraction in the 1 eye, with that obtained by successful intra-capsular operation on

the fellow eye. In 14 instances the result was better by the ordinary method; in 10 patients it was equal in both eyes; and in 7 patients only was it better by the intra-capsular operation.

Maynard concludes thus: "In face of these grave drawbacks it is impossible to recommend the performance of the operation, and personally I have returned to the practice of removing lenses in their capsules only when they are over-ripe and have thick capsules."

(8) **Major Newman** nearly always attempts to expel the lens in its capsule, but gives up the attempt if the lens does not come easily. In these cases he finds that extraction after capsulotomy is facilitated by the earlier manipulation. He thinks that the pressure applied alters the shape of the lens and detaches the cortex from the capsule.

XX. THE PATHOGENY OF ANTERIOR POLAR CATARACTS.

Valude. On the pathogeny of anterior polar cataracts. (Sur la pathogénie des cataractes polaires antérieures.) *Ann. d'Oculistique*, T. CXXXV, p. 447, juin, 1906.

Valude records two cases illustrating the methods of causation of anterior polar cataracts, namely, by intra-uterine inflammation and by ophthalmia neonatorum. In the first, which he considers to have been congenital, there were three small round yellowish specks of opacity on the anterior surface of the lens, some reddish deposits under the edge of the pupil (apparently remains of the capsular membrane), a small perforation of the iris upwards and outwards, which must have been congenital as there was no history or sign of injury, some opacity in the vitreous, and a small choroidal coloboma in the usual situation, with some spots of choroidal atrophy in its neighbourhood. The author thinks that the spots of cataract consisted of remains of the pupillary membrane.

The second case was that of a child who, when eight days old, developed an ophthalmia, characterised by the formation of false membranes on the conjunctivæ, with opacity of the corneæ, but no ulceration. This was followed by an eruption of syphilides. Under specific treatment, the eyes cleared up quickly, and at the end of three months, with the exception of small faint leucomata, they seemed cured. The child was seen again when 11 years old, and was then found to have in each eye faint leucomata and anterior polar cataracts, which later were said by

the parents to be gradually getting less marked. The vision in each eye was reduced to $\frac{1}{10}$, and there was also a spasmodic convergent squint, with a tendency to nystagmus. The author considers that in this case the formation of the cataract was due to the corneal infiltration, but lays stress on the fact that there was never a perforation, or even deep ulceration.

XXI.—FŒTAL INFLAMMATION OF THE EYE.

Seefelder.—Contributions to the theory of fœtal inflammation of the eyes. (Beiträge zur Lehre von der fœtalen Augenentzündungen.) *Archiv f. Ophthalmologie*, Bd. 64, 1, Mai 26, 1906.

Seefelder's two cases are important, as his thorough anatomical examination proves that interstitial keratitis may occur at a comparatively early state of fœtal life, and that congenital corneal opacities can thus result. The most characteristic microscopical changes in the cornea were: extensive degeneration of the epithelium, infiltration of the stroma with polynuclear leucocytes, proliferation of the corneal cells, and the deposit of precipitates on Descemet's membrane. Seefelder's two cases are also interesting, in so far as they demonstrate active participation of the iris and the pupillary membrane, which might contribute to the explanation of posterior synechiæ between the iris and lens, which are usually misnamed membrana pupillaris perseverans. Seefelder suggests that the broad, ribbon-like synechiæ extending from the small circle of the iris to the lens, and surrounded by an area of grey opacity along their insertion to the anterior capsule, are really caused by fœtal inflammation. R. GRUBER.

XXII.—HEREDITARY INFLUENCE IN MYOPIA.

Worth, Claud.—Hereditary influence in myopia. *Trans. Ophthal. Society*, Vol. XXVI (1906), p. 141.

Worth has examined 687 cases of myopia, and divided them into two groups, of which the first, or non-malignant, cases included 654 cases, and the second, or malignant, cases 33. Of the former 56 per cent. gave a history of myopia in parent, grandparent, uncle, aunt, brother, or sister, while of the latter, such a history was forthcoming in 24·25 per cent. only. The

conclusion is that while ordinary myopia shows a strong tendency to be hereditary, the malignant form is not very common. Another point brought out by Worth is that while myopia is slightly more common in males than in females, it is considerably more common in the inherited cases in men. For example, of 313 cases in which no family history was obtained 163 were males and 150 females, whereas of the 374 cases in which a positive family history was got, 228 were males and 146 females.

XXIII.—MISCELLANEOUS.

De Lapersonne.—The neuro paralytic ocular syndrome. (La Syndrome oculaire neuro-paralytique.) *L'Ophtalmologie Provinciale*, juin, 1904.

A report of a clinical lecture by de Lapersonne on a case of the disease usually known as neuro-paralytic keratitis.

R. J. COULTER.

Stirling, J. W.—Amblyopia due to methyl alcohol *Ophthalmic Review*, February, 1905.

The patient whose case is here recorded was a thin, nervous man, aged 41 years, whose sight had been defective since a severe drinking bout 13 months previously. At that time he drank 6 ounces of wood spirit and 2 ounces of brandy within an hour. The next morning he felt unwell, but ate his breakfast and later his dinner, but 22 hours after drinking the spirit he vomited severely, and slept 24 hours continuously. Upon awaking he found his vision completely gone. He remained totally blind for 36 hours, and then sight commenced to return in the left eye, and slowly improved during the ensuing six months, but had been stationary ever since. The right eye improved more slowly. When seen the R.V. = $\frac{1}{20}$ and L. $\frac{1}{10}$; pupils barely react to light; and there is total colour blindness. Both discs were chalk-white, with vessels somewhat diminished; visual fields greatly contracted. The changes seen are similar to those present in quinine blindness, and the ganglion cells of the retina appear to be the most affected.

C. D. M.

Nicati, W.—Unilateral amaurosis and amblyopia—the tests for simulation. (Amaurose et amblyopie unilaterales—épreuves de simulation.) *Archives d'ophtalmologie*, février, 1904.

Bietti, T.—Upon the explanation of an entoptic phenomenon provoked by strong expirations. (Sulla interpretazione di in fenomeno endottico nelle forti espirazioni.) *Annali di Ottalmologia*, Vol. XXXIII, Fasc. 3-4, p. 272.

Sayer, Ettie.—The deterioration of vision during school life. *British Medical Journal*, June 18th, 1904.

Ogg, Theodore A. W.—Note on a case of simulated unilateral amaurosis, following an injury received under the Workman's Compensation Act. *Medical Press and Circular*, 28th September, 1904.

Demaria.—Experimental researches upon the antitoxic effect of the tears against diphtheritic toxin. (Experimentelle Untersuchungen ueber antitoxische Wirkung der Traenen gegenueber dem Diphtherietoxin.) *Klin. Monatsbl. f. Augenheilkunde*, 1904, Bd. II, p. 246.

Demaria's experiments led him to the conclusion that the tears have no antitoxic effect against the toxic substances produced by the bacterium of diphtheria.

A. Birch-Hirschfeld.

Berry, George A.—The effect of accidentally diminished acuteness of vision on its efficiency. *Ophthalmic Review*, September, 1904.

This paper is not one that lends itself to abstract. In it Berry attempts to reduce to a mathematical formula the effect of accidentally diminished visual acuity in rendering the patient more or less inefficient as a worker. C. D. M.

Gonzalez.—Two cases of aphasia complicating ophthalmic migraine due to errors of refraction. (Dos casos de afasia, complicando la jaqueca oftalmica, consecutiva á vicios de refraccion.) *Anales de oftalmologia*, Julio, 1905.

Gonzalez recounts the histories of two cases, in each of which migraine was associated with aphasia (amnesia logokinetica), without deafness, word-blindness, or agraphia. These attacks occurred when the headache was left-sided; when the right side was painful there was no aphasia. In each instance the correction of the ametropia cured the attacks.

Harold Grimsdale.

Rees, Philip.—A case of plague with unusual eye symptoms. *Lancet*, August 4th, 1905.

Rees reports bilateral irido-cyclitis in a Chinese woman suffering from bubonic plague, and remarks that such eye symptoms are very unusual.

Leon.—Sensitive and motor ophthalmoplegia of uræmic origin (Oftalmoplejia sensitivo-motriz uremica *Anales de oftalmologia*, Julio, 1905.

Leon's case was that of a woman of 55 who became the subject of severe headache and disturbances of vision; at first there was vertical diplopia, later the diplopia became horizontal. (Paralysis of the external rectus.) Then there came on ptosis and maximal dilatation of the pupil. This last symptom was soon followed by contraction. When she came under Leon's care he noted complete paralysis of all the external muscles of the right eye, spastic miosis of the right pupil, without any reaction to light, accommodation, or convergence. Fundus normal. Left eye normal. Complete anæsthesia of all parts supplied by the first branch of the fifth nerve, with pain in all these regions. This combination of symptoms pointed to an extensive lesion in the neighbourhood of the sphenoidal fissure. Leon at first thought of a gumma and put the patient on specific treatment, under which at first she improved. Later she developed mercurial poisoning. Then Leon examined the urine for the first time and found a large amount of albumen. He came to the conclusion that his first diagnosis was at fault and that he had to do with an auto-intoxication of uræmic nature.

HAROLD GRIMSDALE.

Snell, Simeon.—Remarks on eye accidents and compensation *British Medical Journal*, April 14th, 1906.

Ramsay, A. Maitland.—On important symptoms in diseases of the eye *British Medical Journal*, April 14th, 1906.

Grossmann, Karl.—A clinical study of lepra ophthalmica, with a description of cases examined at the Leper Hospital in Laugarnes, Iceland, in 1901 and 1904 *British Medical Journal*, January 6th, 1906.

Lunn, John R.—Cerebral basal tumour: double white atrophy; death after 17 years. *British Medical Journal*, June 16th, 1906.

In 1887 Lunn's patient, then aged 27 years, was admitted on account of severe headaches and defective vision, due to post-neuritic atrophy of the optic discs. He remained under continuous observation until the end of 1904—that is, for 17 years—when death occurred. At the autopsy, a non-malignant tumour, the size of a pigeon's egg, was found at the base of the brain, involving the optic chiasma.

Thompson, A. Hugh.—Errors of refraction among children attending elementary schools in London. *British Medical Journal*, July 28th, 1906.

Still, George F.—A clinical lecture on infantile scurvy. *British Medical Journal*, July 28th, 1906.

In the course of an interesting paper based upon 54 cases of infantile scurvy, **Still** points out that "black-eye" in an infant under 12 months, without obvious injury, should suggest that the case may be one of scurvy. The symptom, however, is not a very frequent one, and was present in six only of his series. In five of the cases it was marked enough to cause proptosis of the eye. The discolouration usually involves the upper lid alone. It may, however, extend into the skin in the neighbourhood of the inner canthus.

Thomson, Ernest.—Choroido-retinitis of obscure etiology. *Glasgow Medical Journal*, August, 1906

Thomson has seen two cases of choroido-retinitis of unexplained origin in apparently healthy persons, aged respectively 19 and 25 years. He mentions a third comparable case in a young married lady. It is impossible to resist the suspicion on reading Thomson's cases over attentively that the disease in each instance was probably in the nature of a tuberculous infection. S. S.

Opin—Acute glaucoma consecutive to operations for glaucoma. (Le glaucome aigu consécutif aux opérations d'iridectomie anti-glaucomateuse.) *Archives d'ophtalmologie*, février, 1906.

Opin believes that acute glaucoma following iridectomy for glaucoma is commoner than generally believed. He reports two cases of the kind. H. DE V.

Tooke, Fred T.—Extirpation of chronically inflamed tear sacs. *Montreal Medical Journal*, May, 1906.

Tooke describes Axenfeld's method of removing the lacrymal sac, together with a few modifications he has made in the original procedure. He states the indications for operation, and in doing so, lays stress on the fact that no bacteria or relatively non-virulent bacteria only are found in the conjunctival sinuses after the lacrymal sac has been extirpated.

Manzutto.—Double syphilitic chancre of the eyelids. (Un caso di scleresi iniziale doppia delle palpebre.) *Annali di Ottalm.*, Vol. XXXIV, 1905, fasc. 1-2, p. 37-42.

The chief interest of **Manzutto's** memoir centres around

the bibliographic review of ocular chancres. There have been, it appears, ten cases published of double palpebral chancre, namely, by Seydel two, by Pflüger one, by Fournier two, by Coppez one, by Morel-Lavallée one, by Hulbron one, by Crudeli one, and the present case. A. ANTONELLI.

McKee, S. Hanford.—Organisms normally present in the conjunctiva. *Montreal Medical Journal*, January, 1906.

The bacteriology of the conjunctiva, both in health and disease, is a subject of importance to ophthalmologists. In the present communication McKee reports upon the micro-organisms found by him in the course of an examination of 140 cases at the Royal Victoria Hospital, Montreal, during the years 1902–03. The method adopted was to stroke the palpebral conjunctiva of the lower eyelid with a platinum loop, and then with the material obtained in this way to inoculate various nutrient media. Of the total number of cases (140) examined forty yielded negative results. The organisms found in the remaining hundred cases were as follows:—Staphylococcus pyogenes albus, 48 times; staphylococcus epidermidis albus, nine times; staphylococcus pyogenes aureus, twice; streptococcus pyogenes, 16 times; bacillus xerosis, 42 times; bacillus belonging to the diphtheria group, once; and sarcina lutea, once.

Stephenson, Sydney.—Some syphilitic affections of the eye. *Polyclinic*, June, 1906.

Among the cases of syphilitic disease of the eye described by Stephenson are the following:—(1) bilateral iritis in a woman of 24 years following a chancre upon the upper lip; (2) unilateral irido-cyclitis in a man of 34 years, associated with a gummatous testicle, the result of "complete" syphilis five years before coming under notice; (3) a case of interstitial keratitis in a lad of 14 years, in whom one eye has been lost from keratectasia and secondary glaucoma, and who formerly presented a very remarkable enlargement of the finger joints; (4) paresis of the external rectus muscle in a patient, aged 31 years, who had acquired syphilis eight years before; and (5) a case of infantile glaucoma in a baby in whom there is reason for suspecting congenital syphilis.

Scholtz, Kornel.—On the agglutination of pneumococci (Ueber die Agglutination der Pneumococen). *Arch. f. Augenh.*, September, 1905.

Scholtz undertook a series of experiments with the object of determining whether the serum obtained after infections of one

particular culture of pneumococci was capable of agglutinating pneumococci taken from another source. He found that this was sometimes the case, but not generally so, and hence concludes that there must be different varieties of the germ. He suspects that they differ not only in causing the production of different agglutinins, but also different protective bodies. This would explain why in so many cases, the serum treatment of pneumococcal corneal ulcers has met with indifferent or no success. PERCIVAL J. HAY.

REVIEWS.

Transactions of the Optical Society. Session, 1904-1906. London. Price, 10/-.

This little volume of 96 pages contains papers read before the Optical Society, many of which are of some ophthalmological interest. Mr. Dixey, in a paper on periscopic lenses, examines and comments on the work of Ostwalt and Percival; he emphasises the importance of radial astigmatism in spectacle work, and advocates in this connexion a more frequent use of periscopic lenses. In a paper by Mr. Phillips, on the measurement of absorption, a suggested standard series of tints for spectacle lenses is based on the percentage of transmitted light, and a method of calibrating the series is indicated. Messrs. Chalmers and Ryland describe a new method of testing right-angled prisms, and there are interesting papers by Prof Silvanus Thompson, Mr. A. J. Bull, and others.

Beiträge zur Augenheilkunde. Festschrift Julius Hirschberg von Schülern und Freunden aus Anlass seiner fünfundzwanzigjährigen Wirksamkeit als Professor an der Universität, Berlin. Leipzig: Verlag von Veit & Co. 1905.

This volume of 352 pages comprises important contributions to ophthalmology by 22 of the pupils and friends of Dr. Hirschberg, and is published to celebrate the twenty-fifth year of his Professorship in the Berlin University. There are 24 illustrations and 10 plates. The contents are as follows:—

De Lapersonne, "Blepharoplastie par la méthode italienne modifiée (operation de Graefe)"; van Duyse, "Xanthome double et symétrique des conjunctives bulbaires"; Guiseppe Albertotti, "Trattamento della Cataratta"; Elia Baquis, "La trombosi della vena centrale della retina"; A. Birnbacher, "Über die Ursachen

der Binnendrucksteigerung bei Geschwülsten innerhalb des Augapfels"; Claude du Bois-Reymond, "Zur Geschichte der Glaslinsen"; Oskar Fehr, "Primäres Sarkom der Iris"; R. Kuthe und S. Ginsberg, "Malignes Epitheliom des Ciliarkörpers bei einem fünfjährigen Kinde"; Loeser, "Über die Beziehungen zwischen Flächengrösse und Reizwert leuchtender Objekte bei fovealer Beobachtung"; Fritz Mendel, "Netzhautblutungen bei Meningitis syphilitica"; Kurt Mendel, "Beitrag zur Pathologie des Halssympathikus"; Chr. Mey. Weigandt, "Aus dem Allgemeinen Krankenhaus in Eger"; Wilhelm Mühsam, "Ein Fall von Sklerodermie der Lider"; Alfred Moll, "Zur Darstellung der Neuroglia und der Achsenzylinder im Sehnerven"; Max Peschel, "Ein Fall von Dermoidzyste der Orbita mit zahlreichen Mastzellen"; Otmar Purtscher, "Zur Vorhersage der Augenverletzungen durch stumpfe Gewalt mit besonderer Berücksichtigung des Kontusionsstars"; Schwartz, "Einseitiges Zurückenkolobom der Iris und doppelseitiges Aderhautkolobom"; Richard Simon, "Über die diagnostische Verwertung der erworbenen Violettblindheit"; Kurt Steindorff, "Über Häufigkeit und Heilbarkeit der sympathischen Augenentzündung"; Giuseppe Ovio, "Anatomische Untersuchungen über Retinitis Proliferans"; Bruno Wolff, "Über Augenverletzungen des Kindes bei der Geburt."

Researches on the Origin and Development of the Epiblastic Trabeculae and the Pial Sheath of the Optic Nerve of the Frog, with Illustrations of Variations met with in other Vertebrates, and some Observations on the Lymphatics of the Optic Nerve. By J. T. Gradon, M.A., 1906.

Gradon studies the fate of the epiblastic cells, which form the hollow stalk of the primary optic vesicle. At first they form a single layer and are well differentiated from one another. When, however, the optic fibres grow into the stalks, chiefly from the neuroblasts of the retina, the cell divisions become obscured. This occurs first on the ventral aspect. But the original epiblastic nuclei remain, and the protoplasm becomes stretched to form an interlacing network of fine fibrils, which support the nervous elements. This network persists in the fully formed nerve, though more or less hidden by the crowded nerve fibres. Its trabeculæ are not only transverse, as has previously been described, but also oblique and longitudinal. At first the growth of the nerve is slow, but when the subarachnoidal lymph space is fully developed, it proceeds much more actively, the lymph being brought into contact with every part of the nerve by minute spaces along the fibrils of the epiblastic framework. The

filling in of the cavity in the centre of the stalk depends chiefly on the ingrowth of the nerve fibres. In opposition to Assheton, Gradon believes that the nerve fibres grow within, not outside of, the epiblastic external limiting membrane of the nerve. He compares the conditions in the frog with those found in the dog-fish, trout, chick, and mouse. In all these animals the arrangements are essentially similar, but slightly different types are formed by the accentuation of minor peculiarities of structure. The pia mater is formed from the surrounding mesoblast and does not become completely fused with the epiblastic elements.

G. C.

Augenleiden bei Diabetes Mellitus. (**Eye disease in Diabetes Mellitus.**) By Professor GROENOUW. Halle: Carl Marhold, 1907. Price, 2 marks.

Groenouw's *brochure* forms an epitome of our present knowledge of diabetic eye affections. The subject ever commands the close attention of the ophthalmic surgeon both from scientific interest, and the clinical importance attached to it, and a contribution from a man of wide experience is doubly welcome.

Historical and statistical notes form the opening chapters in Groenouw's monograph. "Diabetic Amplyopia," was first recognised in France and Great Britain, and later in Germany. According to the author's calculations, about 9½ per cent. of diabetic patients suffer from their eyes, and of these about a third complain of cataract. As a rule, eye symptoms are a late manifestation of the disease. Passing on from these statistical considerations to the external affections of the eyes, and then to iritis and cataract, the writer devotes considerable attention to the last. Age-incidence, sex, general health, clinical appearances complications are discussed, and, finally, treatment. As regards operative interference, he holds, providing the general condition of the patient is good, diabetes is not a bar to operation, and, although it is well to diminish the amount of glucose present in the urine by suitable treatment, absolute absence of sugar is not necessary. In the majority of the cases healing of the wound proceeds without a hitch, the danger of coma may be averted to a certain extent by shortening the period of rest in bed as much as possible, and by not insisting on too strict a meat diet. With these views the majority of surgeons will agree. A short chapter on diabetic retinitis follows, and then a more detailed review of the affections of the optic nerve, particularly retrobulbar neuritis. Much stress is laid upon tobacco and alcohol as exciting causes of optic neuritis in diabetic patients. The closing chapters deal with glacuoma, myopia, and hypermetropia, paresis and paralysis of the internal and external ocular muscles, and, lastly,

diabetic coma. Mention is made of the interesting fact, observed by Heine and Krause, that in coma due to diabetes the intraocular tension is very much reduced. A good list of literary references concludes an interesting monograph.

NOTES AND ECHOES.

Obituary.

C. ADAMUCK, formerly Professor of Ophthalmology in the University of Kasan, is, we regret to announce, dead. He did much work on the subject of trachoma, and especially insisted upon the distinction between folliculosis and trachoma of the conjunctiva. Professor August v. Rothmund, who wrote upon coloboma and bullous keratitis, among other ophthalmological subjects, died at Munich on the 27th of October last. A. P. Gilmore, once a prominent figure in the American ophthalmological world, died at Chicago on October 10th. Mr. T. Beattie Campbell, for upwards of twenty years the energetic and capable secretary of the Royal Westminster Ophthalmic Hospital, London, died on November 28th last. Mr. Campbell, who was a nephew of the poet Thomas Campbell, had been an invalid for about two years.

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Resignations and Appointments

IN THE November list of honours was to be found the name of Mr. Tweedy, late President of the Royal College of Surgeons of England, and of the Ophthalmological Society. Best congratulations to Sir John Tweedy! Theodor Saemisch, born September 30th, 1833, will shortly retire from the post of professor in the University of Bonn, Germany, which he has held since the year 1869. Dr. Saemisch is well-known to all ophthalmic surgeons by his masterly contribution on diseases of the conjunctiva, cornea, and sclera, in the Graefe-Saemisch *Handbuch der Gesamten Augenheilkunde*, of which a new edition has lately been published. Völckers, Professor of Ophthalmology in Kiel, will retire on April 1st, 1907, from his professoriate, which he has occupied since 1873. Dr. Dolganow has succeeded the late Professor Kostenitsch as director of the clinical department of the Grossfürstin Helene Paulowna at St. Petersburg. T. Harrison Butler, a contribution from whose pen appears in the current number of THE OPHTHALMOSCOPE, has been appointed

ophthalmic surgeon to the Coventry and Warwickshire Hospital, England. Dr. Butler, one time Radcliffe Travelling Fellow of the University of Oxford, has recently vacated the post of assistant surgeon to the British Ophthalmic Hospital, Jerusalem, Palestine. Dr. K. Baas has succeeded Dr. T. Gelpke, deceased, as director of the eye klinik in Karlsruhe, Germany. J. C. Halliday has been appointed assistant ophthalmic surgeon to the Royal Prince Alfred Hospital, Sydney, New South Wales. Maximilian Salzmann, *privat-docent* in Vienna, has been awarded the title of extraordinary professor of ophthalmology. R. Schreiber has been named *privat-docent* in Heidelberg, Natanson in Moscow, Ricchi in Pisa, Erdmann in Rostock, and Bartels in Strassburg

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Dr. Thomas Reid, of Glasgow.

DR. THOMAS REID has been entertained to dinner by his old house-surgeons in the Glasgow Eye Infirmary, who took the opportunity of presenting him with an address congratulating him on having attained his professional jubilee. He was also presented with a silver bowl.

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Moorfields Hospital.

IT is announced that the past and present students of the Royal London Ophthalmic Hospital will dine together at the Trocadero Restaurant, London, on Wednesday, January 30th next, when Mr. Jonathan Hutchinson will preside. Every student may invite two guests. The cost of dinner tickets is 10s. 6d. each, exclusive of wine. Applications to the honorary secretaries, A. Lawson, 12, Harley Street, W., or J. H. Parsons, 27, Wimpole Street, W. We trust the gathering will be a most successful one.

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Wiesbaden Eye Hospital.

WE learn that the Wiesbaden Eye Hospital, erected in the year 1854 for the late A. Pagenstecher, has been rebuilt, and that it now contains, besides wards for private patients, some seventy ordinary beds. Readers may remember that it was to solicit British subscriptions for this institution that Professor Pagenstecher some time ago took the very unethical step of writing a letter, signed with his own name, to the *Times*. The professor at the time justified his claim to British support by the statement that many poor British patients had been treated there. Some people thought, however, that quite enough good British gold

found its way, as it was, to the picturesque Rhineland town, without the eloquent and direct appeal of Professor Hermann Pagenstecher.

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The Optician Question.

ONE of the most pithy arguments we remember to have seen against the prescribing optician appeared in the *Lancet* of October 13th last, over the signature "Fife." The writer is an ophthalmic surgeon to whom a copy of the *Optician and Photographic Trades Review* was sent in the ordinary way of advertisement. His attention was arrested by some highly technical advice offered therein to an assistant. "Fife" was thereupon incited to hurl his thunderbolt, which he did with skill, energy, and precision. His aim was centered upon the crushing contention that many sufferers from serious maladies are certain to regard spectacles as their cure-all, and spectacle makers as their guardian angels. "Fife" shows that prescribing opticians may mislead them hopelessly and fit them with glasses, whereas they may be in the grip of some deadly disease where the only hope lies in prompt recognition and skilled medical treatment. We quote "Fife's" own words, for they are to the point, as follows:—"I have during the last few months had the following cases through my consulting room. Two of hemianopsia with cerebral tumour, since dead, both losing six months of invaluable medicinal opportunity whilst having spectacles provided and changed, etc., by opticians whom they had unfortunately consulted; one of diabetic cataract, nine months under an optician with three changes of expensive spectacles; one of optic atrophy, five months under an optician with three changes of spectacles. One lady whom I operated upon for cataract (double—could not count fingers with either eye) was, four months before, carefully examined by an optician "in a dark room" and solemnly assured that there was nothing the matter with her eyes, but that her pride was preventing her from wearing the necessary spectacles, etc. Surely it is about time that the question was settled whether it were not better for ophthalmic surgeons to become opticians as well, in order, if possible, to protect the public from the educated incapacity of this spreading charlatanism."

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A Libel Action settled.

THE libel action brought by an optician, named Aitcheson, against a member of the medical profession, Mr. R. Brudenell Carter, based upon some correspondence in the *Times* news-

paper, has been settled by Mr. Carter making an explanation (it hardly amounted to an apology), and agreeing to pay the plaintiff's taxed costs.

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Ophthalmological Society. As many of our readers are aware, the Ophthalmological Society at a special meeting on November 8th, 1906, determined by a simply overwhelming majority to stand outside the proposed union of London medical societies. It was indeed difficult to see what other line could have been taken, since the society is in no sense a London one, but represents, and worthily represents, ophthalmology in every part of the United Kingdom and her colonies and dependencies. By this action the Ophthalmological Society has fallen into line with the several other dissentients, namely, the Medical Society, the Society for the Study of Disease in Children, the Society of Anæsthetists, the Anatomical Society, the Physiological Society, and the Medico-Psychological and the Medico-Legal Societies. Four other societies are willing to join only on condition that certain points are conceded—the Balneological, the Therapeutical, the Otological, and the Laryngological. Twelve of the societies, on the other hand, have decided to join the union. The most important of these are the Clinical, the Dermatological, the Neurological, the Odontological, the Obstetrical, and the Pathological ; and, of course, the prime movers and promoters of the scheme, the Royal Medical and Chirurgical It is to be hoped after so determined an expression of opinion from the Ophthalmological Society, that none of its members will be so disloyal as to help form an eye section in the new Academy of Medicine. An attempt, however, is sure to be made to induce them to do so.

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Donation to the London Hospital. LORD IVEAGH has given a donation of one thousand pounds towards the ophthalmic department of the London Hospital.

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Ophthalmia in Aberdeen. A WIDESPREAD epidemic of ophthalmia has recently affected the elementary school-children of Aberdeen, Scotland. Its propagation appears to have been fostered by the mulish attitude of the educational authorities, who insisted that children suffering from inflamed eyes should be compelled to continue to attend

school. The northern city is singularly behind the times in failing to recognize the enormous influence possessed by a school in spreading not only disease of the eye, but other infective maladies also. The alluring prospect of a large grant seems never to be absent from the managers' eyes, and is responsible for the dissemination of many a contagious disorder, to say nothing of ophthalmia. A grant earned at the cost of the public health is neither a sound nor a profitable proceeding! It represents loss and not gain to the community at large.

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The Monocle.

G. K. CHESTERTON has recently denounced the monocle in the pages of the *Illustrated London News*, in the following amusing words:—"A single eyeglass is a thing in its nature altogether monstrous and devilish. The man who can put a glittering decoration in one eye and not in the other is blaspheming the balance and decency of the human form. He is capable of wearing a trouser on one leg, or his moustache on one side of his face."

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